COOKIA

Journal of the Wellington Shell Club, New Zealand
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the bountiful **Bay** *of* **Islands**

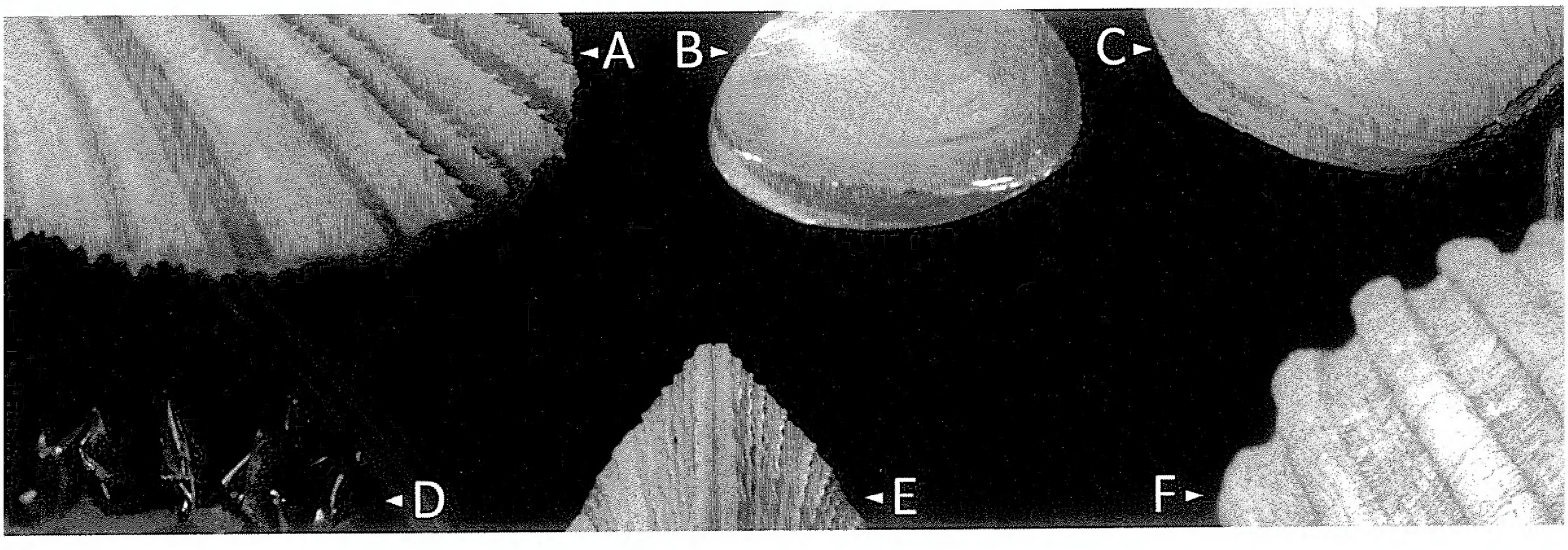
Fossil hunting ODYSSEY

Rare? or Medium-rare?

Where is NEW ZEALAND?

hrs Woods

Identification challenge:



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Editorial

As *Cookia* goes to press, Museum of New Zealand Te Papa Tongarewa is undertaking its second major restructuring in five years, a restructure that will affect the positions of all remaining Science Collection Managers, including Dr Bruce Marshall.

Te Papa and its predecessors have a distinguished record of highly qualified experts on New Zealand mollusca on staff. Not least our Club's founder, Dick Dell. We can be very proud of the national collection of Mollusca, and the associated body of research, to which Bruce has made an exceptionally significant contribution.

Te Papa's last restructuring, in 2013, resulted in the loss of 3 natural history Collection Managers as well as all of the technicians. Perhaps Te Papa underestimates the value of science in its quest to change our hearts and minds and lives - it doesn't get much mention in Te Papa's current "Strategic Narrative". A shame in every sense: in these days of fake news, science is our best defence.

Cover photo: *Powelliphanta hochstetteri bicolor* (Powell, 1930) Bluemine Island, Marlborough Sounds, 1975

Fossil Trip

by Eric Scott

Fossils are something that Heather (my wife) has been interested in right from our early days with Wellington Shell Club, when we used to go on field trips to Castlecliff and Kai-Iwi beaches in Whanganui. I am talking about the days when Betty Andrews, Peter Jamieson and Jean Boswell were members of the club. We used to stay overnight in Betty's shearing quarters and drag the kids along the beach in pushchairs up to the "Pinnacles", a favourite collecting site. Pat and Jenny will no doubt remember those days. Since leaving Wellington back in the 1980s, however, we have done little to no collecting of fossils and Heather had finally had enough of being left out when deciding where to go next in search of shells. So in April/May of 2018 we decided to do a three-week fossil trip around the bottom of the North Island starting in South Taranaki District and finishing in Opotiki District.

For the first four days we based ourselves at Waverley and visited coastal fossil sites between there and Manaia. The tide was against us when we went to Kaukoponui Beach at Manaia, so we didn't have any success there, but further down the coast out from Hawera, we had quite successful collects at Ohawe and Waihi beaches. When collecting at Waihi Beach one needs to be careful to note in which strata the fossils are found, as the strata near the top of the cliff beside the track down to the beach contain quite young fossils while those from the strata at the bottom are significantly older. Waverley and Waipipi beaches were also very productive but the shells seemed to be a lot more fragile and so it was difficult to get whole ones. However, we did manage to get examples of the more exciting species found in this area. We also managed to catch up with some old shelling friends, club members Rod and Maureen Sudlow, who moved to Whanganui from Dargaville recently.

Our next stop was Wellington where we caught up with Bruce Marshall and Kerry Walton at the Museum of New Zealand Te Papa Tongarewa, and Pat Lakeman at her home. We managed to do some collecting with Kerry and Kris Woods at Eastbourne Beach, Seaview and the Petone foreshore. There were huge but poor quality *Perna canaliculus* (Gmelin, 1791) at Eastbourne, and also huge *Macomona liliana* (Iredale, 1915) shells at Petone, which were in good condition! We also did some collecting with Kerry at

Above from top: *Crassostrea ingens* (Zittel, 1864) from Waverley Beach; *Ostrea chilensis* Philippi, 1844 & *Lima waipipiensis* Marshall & Murdoch, 1919, both from Ohawe Beach.

Right: Waihi Beach site near Hawera, South Taranaki.

Wainuiomata, looking for *Wainuia urnula* (L. Pfeiffer, 1855) [Ed. note: arguably these were topotypes, Wainuiomata being the type locality, hence the genus name '*Wainuia*'] and *Latia neritoides* Gray, 1850, which are terrestrial and freshwater species respectively.

We next based ourselves at Masterton where we spent four days exploring sites in the Wairarapa area. "Big Gully", a site near Lake Ferry, was quite productive in bathyal (deep water) fossils. Species such as *Aeneator willetti* (C.A. Fleming, 1955), *Cominella cingulata* (Hutton, 1885) and *Splendrillia whangaimoana* Vella, 1954 were fairly common. Whatarangi Bluff, near the Pinnacles Reserve on Cape Palliser Road, was again productive but did not yield anything different from the last time we visited. We did go further this time and visited Kupe's Sail (we did not see any fossils there though) and Cape Palliser Lighthouse, which I climbed for magnificent views across Palliser Bay and to the south.

We also visited inland sites near Gladstone and Martinborough but unfortunately we did not have any success at these. More work needs to be done, getting permissions and identifying the correct locations, before a future trip. Not to be discouraged we went to Castlepoint and saw many fossils in the reef near the lighthouse - but this area is now a no-take zone as it is a geologic reserve. It was still worth the look and while there I managed to climb Mount Lion and saw fossil signs on the way up. We also visited the "tongue and groove" formation on the low tide rock platform at nearby Whakataki. It arose from a geological event that happened 20 million years ago (mya) – quite spectacular! While in Masterton, we took the opportunity to visit Fred and Lesley Keil. They were great hosts and they in turn

Clockwise from top: The Big Gully site, Whangaimoana, near Lake Ferry, South Wairarapa; *Alcithoe gatesi* Marwick, 1926 from the Big Gully site; *Agnewia kempae* Powell, 1934 from road embankment, SH35 Te Piki in Opotiki District; a selection of fossil shells from the Big Gully site.

introduced us to a friend of theirs, Ian Summers, who had the most amazing private fossil and mineral collection we have ever seen. Ian is in his 90s and still takes great delight in showing off his collection to interested people such as ourselves.

Moving further up the island, after picking up Kerry who joined us for the rest of our trip, we based ourselves at Wairoa for two days. En route we stopped off at "Devil's Elbow" on State Highway 2, a significant fossil site dating from the Nukumaruan stage (2.4 – 1.2 mya). This is not a place for the faint-hearted as the fossils are embedded in the roadside embankment and with trucks and other traffic rushing past at speed, often with only inches to spare, you need to be brave to get what you want! Needless to say, it was a fairly productive site for us. Further on we took a detour to Mohaka where we checked out the bathyal sites at the mouth of the Mohaka River. We did manage to get some material from here. It will take a bit of work to extricate the fossils from the siltstone substrate.

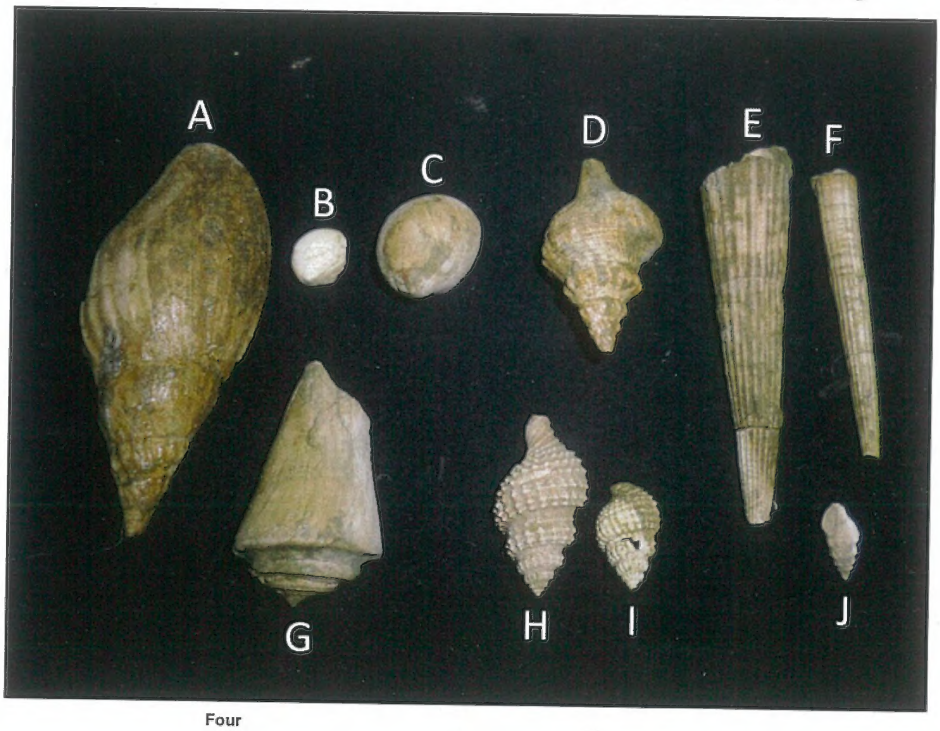
***Left: Poirieria zelandica* (Quoy & Gaimard, 1833) from road embankment at Devils Elbow SH2, Hawkes Bay.(Nukumaruan).**

a day visiting Mahia Peninsula beaches such as Auroa Point, Opoutama, Mahanga and Waikokopu. There were no significant finds but we did get some interesting material, particularly some nice pairs of *Paphies donacina* (Spengler, 1793) with purple colouring from Opoutama Beach and some exquisitely clean and beautifully coloured limpet shells from Waikokopu. At Waikokopu Beach I saw, for the first time, a novel means of obtaining perfect limpet shells: limpet + boiling water = a perfectly clean non-chipped shell that comes straight off! [Ed. note: a 'limpet' could be a useful unit of measurement: 1 limpet would be equal to 90 ml of water at 90°C at sea -level!] While at Mahia, we visited past club member Bill Shortt. He has a magnificent collection of paper nautilus shells (both New Zealand species), which he has gathered over the years from Opoutama Beach and Portland Island.

Continuing north to Tolaga Bay, we lunched with Kerry's friends and club members Dave and Marg Fraser and Geoff and Raewynn Foreman at Gisborne, before shopping in preparation for our stay at Te Araroa. While at Wairoa, Kerry had made several traps for catching *Cominella tolagaensis* Ponder, 1968. The intention was to set them off Tolaga Bay wharf. After setting up for the night we duly traipsed out to the end of the wharf to set the traps. However, the weather had turned for the worse and there were huge swells, which were crashing into the underside of the wharf. These were being whipped up by very strong

Assortment of fossils from Maruhou Pt, Te Araroa (Kapitean):

- A. ***Alcithoe* sp.**
- B. & C. ***Polinices scalptus* (Marwick, 1924)**
- D. ***Falsicolus orientalis* Marwick, 1931**
- E. ***Fissidentalium* sp.**
- F. ***Fissidentalium* sp.**
- G. ***Conus hendersoni* Marwick, 1931**
- H. & I. ***Austrofusus coerulescens* Finlay, 1930**
- J. **Possibly a species in the family Drilliidae**



We took a rest from fossils and spent

winds. Not to be deterred we still proceeded to set the traps. We managed to get them to sink to the bottom and tie them off to the bollards and rails before returning to our accommodation. Next morning, full of anticipation (if not optimism), imagine our disappointment to find that all of them had been snapped off or snagged irretrievably! A bitter lesson. Not one to be easily deterred, Kerry proceeded to make some more for launching off the Hicks Bay wharf.

Onwards again, this time to Te Araroa where we were to stay for five days. We stopped first at Anarau Bay. While we found fossils here, they were encased in a far harder sandstone substrate, so it will take some effort to extract them. We did find more limpets here however, so it was still a productive collect. Our next stop was at Maruhou Point which is basically a mid to low tide rock platform comprised of siltstone which can be reasonably easily worked to extract fossils. We visited this site several times. The fossils here are predominately warm climate ones, including *Cypraea* and *Conus* species, which are normally associated with tropical waters. After settling into our accommodation, Kerry and I headed off to Hicks Bay Wharf to set his traps once again. Darkness was falling when we arrived but it was still light enough to see that the wharf was closed to the public because of safety issues. To make the point that they didn't want anyone on the wharf they had put a huge fence across the entrance. We finally had to admit defeat and headed back. Needless to say, I still have the traps and hopefully will be able to use them in some of our northern west coast harbours, targeting *Cominella accuminata* Hutton, 1893 - but that will be for another *Cookia*! Other sites visited in this area included East Cape Lighthouse (which Kerry and I climbed up to, finding *Charopa* and *Tornatellinops* land snails on leaves next to the track), East Cape beach (bad weather meant that the rock pools were covered in knee high water even at low tide, so collecting wasn't great), Te Piki (great fossil site) and Oweka Creek (some fossils here but scarce). We also visited Waihau Bay and Lottin Point but both were disappointing as far as shells were concerned.

On our way home we stopped off at Ohope Beach and were greeted by a huge wash up which yielded quite a bit of interesting stuff – nothing too rare but good clean specimens of some common and uncommon species. We finally dropped Kerry off at Auckland Airport, which brought our holiday to an end. All in all it was a hugely successful trip and Heather and I are still unlocking little treasures as we extricate them from the substrate they are locked in.

Above, from top: Kerry's shell traps; checking the traps in the morning at Tolaga Bay Wharf, northeast of Gisborne.

Below: Treasures being unlocked - *Conus hendersoni* Marwick, 1931 (left), & *Falsicolus orientalis* Marwick, 1931 (right), both from Maruhou Point, Te Araroa.

All photos: Eric Scott

Where is "New Zealand"?

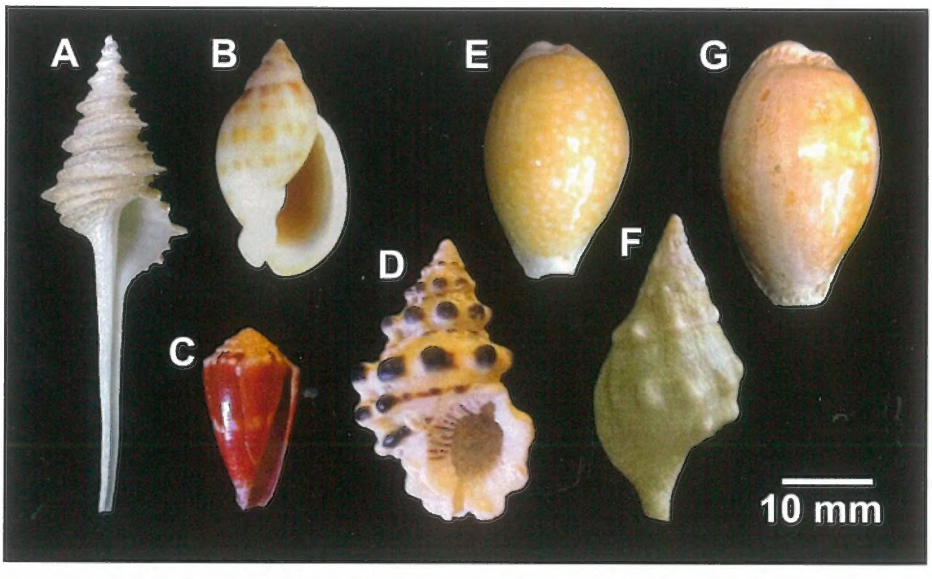
by Kerry Walton

So you collect shells from "New Zealand"? And just where is that exactly? Many collectors limit their collections to shells from "New Zealand"; but it turns out that not everyone can agree on what regions one might include in or exclude from what is intended to be a "New Zealand" shell collection. Do you limit your collection to the New Zealand mainland? If so, would you include Stewart Island? Furthermore, it would seem strange to exclude the Chatham Islands when they have so few endemic coastal marine species.

One common solution would be to follow political maritime boundaries. This would encompass all regions within our exclusive economic zone (EEZ) - the area of sea within 200 nautical miles of the shore (and slightly less where it borders the EEZ of other nations). The New Zealand EEZ, however, includes some rather distant islands with faunas markedly different to those present on the mainland. Such islands include the sub-tropical Kermadec Islands, which are situated not quite 1000 km north-east of the North Island, as well as the sub-antarctic Snares, Auckland, Campbell, Antipodes and Bounty Islands, which lie up to 700 km distant from the southernmost part of the South Island. The New Zealand EEZ excludes such territories as Macquarie Island, which is not much more distant (~1000 km) from the New Zealand mainland than our own sub-antarctic islands and Macquarie Island certainly has less affinity, biogeographically speaking, with its own administrative authority, Australia, than it does to New Zealand. Some collectors might then be forgiven for cheekily including Macquarie Island in their "New Zealand" collection.

Many people have noted the significant faunal differences between the sub-tropical Kermadec Islands and the temperate mainland and use this to suggest that the islands are perhaps of less "importance" or "relevance" to a "New Zealand" collection. How much, I wonder cynically, is this sentiment driven by the difficulty or cost of obtaining genuine Kermadec specimens? They are both remote and legally protected care of a marine reserve, thus limiting the number of specimens available to private collections. Would there be a similar lack of interest in the Kermadec Islands were the island chain to include additional (hypothetical) islands closer to the mainland, say, where the Rumble Seamounts lie, complete with an intermediate fauna? Many who exclude the Kermadecs from their collections seem quite content to include the sub-antarctic islands.

Geographically, the Kermadec Islands occur along the same ridge system as Tonga, and although the two conveniently form discrete island clusters, they are all essentially part



A: *Coluzea altocanalis* Dell, 1956, Central Campbell Plateau: a species that occurs both off the sub-antarctic islands and mainland New Zealand.

B-G: Species that occur at both the Kermadec Islands and the mainland:

B. *Casmaria perryi* (Iredale, 1912), Kermadec Islands.

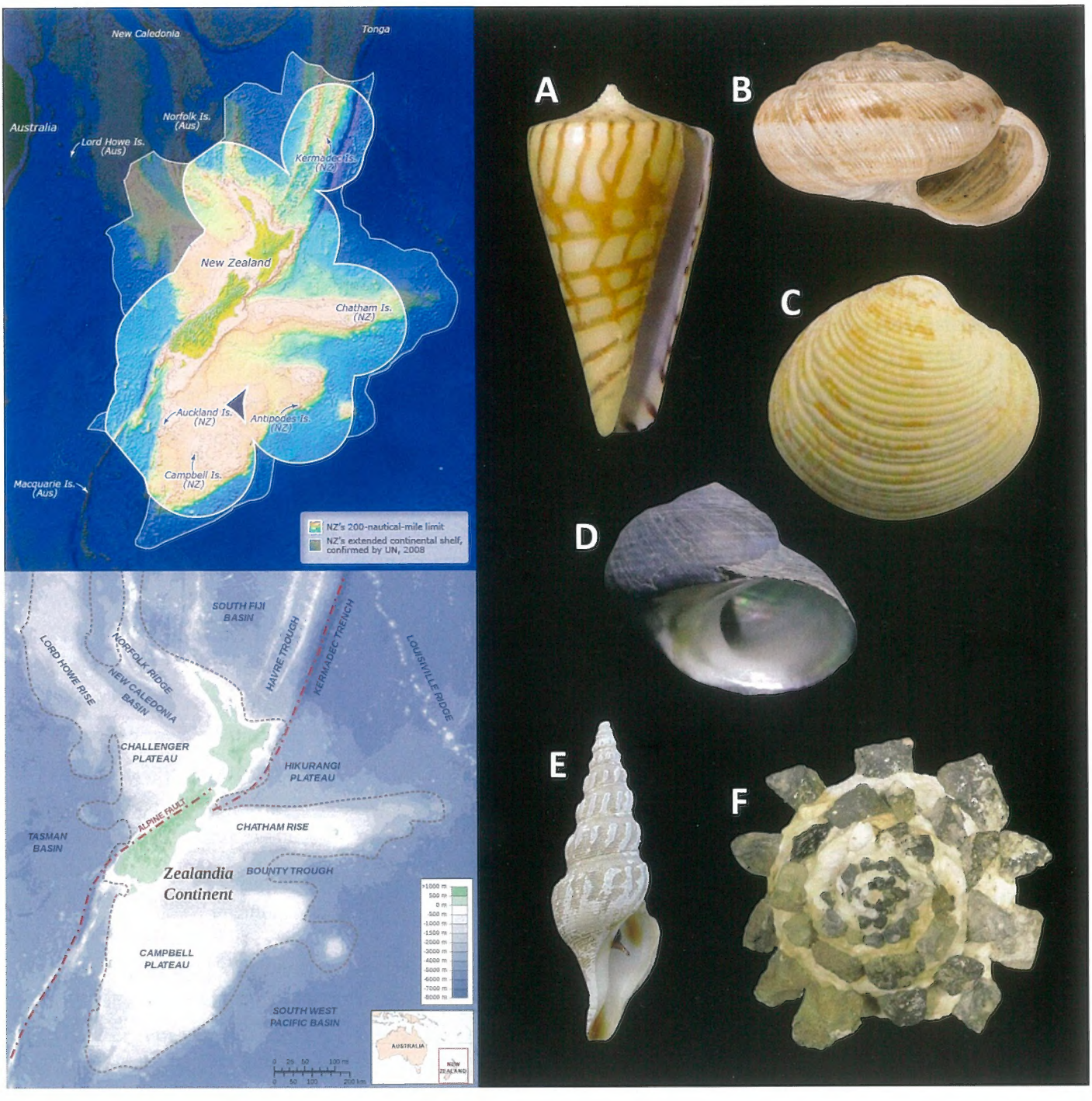
C. *Conus kermadecensis* Iredale, 1912, Kermadec Islands.

D. *Bursa verrucosa* (G.B. Sowerby I, 1825), Kermadec Islands.

E. *Erosaria cernica* (G.B. Sowerby II, 1870), Poor Knights Islands, Northland.

F. *Proxicharonia palmeri* (Powell, 1967), eastern North Island.

G. *Erosaria cernica* (G.B. Sowerby II, 1870), Kermadec Islands.



Top left: Map of the New Zealand region showing undersea bathymetry and the Exclusive Economic Zone (https://teara.govt.nz/en/map/33830/exclusive-economic-zones).

Bottom left: Map of the New Zealand region showing the outline (red dashes) of the largely submerged continent of Zealandia as well as bathymetry and continental plate margins (https://commons.wikimedia.org/wiki/File:Zealandia-Continent_map_en.svg).

A. *Conus plinthis* Richard & Moolenbeek, 1988; a species only known from perhaps as few as half a dozen specimens from the Kermadecs, but more common in New Caledonia.
B. *Xeroplexa intersecta* (Poiret, 1801); collected in Eastbourne, Wellington, this adventive species originated from the Mediterranean.
C. *Tawera phenax* (Finlay, 1930); does a specimen from the Snares (subantarctic) Islands lack the appeal of an Otago specimen?
D. *Diloma nigerrimum* (Gmelin, 1791); this species spans the Pacific, occurring off Chile as well as in New Zealand.
E. *Comitas onokeana vivens* Dell, 1956; this specimen from the Chatham Rise originated hundreds of kilometres from mainland New Zealand.
F. *Xenophora neozelanica* Suter, 1908; this example is from mainland New Zealand, but there is a distinct subspecies occurring at the Kermadec Islands.

of the same geographic formation. Tonga has what might be considered a fairly typical tropical Indo-Pacific fauna. The Kermadec fauna however, is an interesting mix of locally endemic species as well as those with affinities to the New Zealand mainland, Australia, Norfolk Island and the wider tropical Indo-Pacific. In many ways, the Kermadecs are their own entity. If New Zealanders don't care to collect or study species from there, then who will? The same might then be said for the Louisville Ridge to the east of the Kermadecs - a chain of submarine volcanos that does not break the surface and lies solely in international waters. Should we exclude this ridge only because it lies beyond our EEZ? Were it to break the surface, it would likely be included as New Zealand territory and, given its latitude and isolation, the fauna might be expected to resemble that of the Kermadecs were shallow water habitats available.

How about shells from closer to the mainland but similarly just beyond the EEZ boundary such as *Bathymophila diadema* (B.A. Marshall, 1999) from the Tasman Sea, just beyond New Zealand's EEZ? It's from closer to New Zealand than Australia. To limit yourself to "New Zealand" you must draw a line, but where? How can one's interest be determined by an essentially arbitrary line drawn to represent political boundaries? How can shells from mere metres apart on either side of said distant boundary warrant such different attentions? There is a small area of international waters otherwise enclosed within our EEZ just to the south of the Chatham Rise. Do shells from there not count as 'ours'? How about the New Zealand administered Ross Sea sector of Antarctica?

Ignoring political boundaries, the recently recognized Zealandia continent includes New Caledonia but not such islands as the Kermadecs and Macquarie. Should we be adding New Caledonian and Norfolk Island specimens to our collections too now, possibly even prioritizing them over shells from the Kermadecs? The faunas are not entirely different, although they are decidedly foreign to someone best acquainted with shells from the New Zealand mainland. Less so perhaps to someone acquainted only with the Kermadecs fauna.

How then, do you feel about such shells as *Nautilus macromphalus* G.B. Sowerby II, 1849? These wash-in very occasionally along 90-mile Beach and other northern beaches. The shells can float and it is almost certain that those shells that wash-in on New Zealand beaches never lived anywhere near our territorial waters - likely instead they floated all the way from New Caledonia. Should such records accordingly be discounted from our faunal checklists? How about our "New Zealand" shell collections? Is this true also for adventive species like the land snail *Xeroplexa intersecta* (Poiret, 1801)?

This is, of course, a subjective exercise. Hopefully these comments will provide some fuel for consideration as well as entertainment.

Musings of a snail collector ..... by Fred Keil

It was a dark and stormy night (apologies to Bulwer-Lytton); this famous opening phrase matches the present weather on this 11 June 2018 - only days away from the shortest day of the year - and it makes me ponder on how my friends, the land snails are coping with these conditions. One way to overcome the harsh conditions is to do like the bears and hibernate, and I have read (for example in the last issue of *Cookia*) that some snails are capable of sleeping (aestivating) for years should the conditions go against them.

Some of our native snails live high in the mountains and must experience freezing temperatures. Can they tolerate being frozen solid like a Canadian frog? This frog gets frozen solid in early winter and thaws out in the spring and hops away unharmed. Or do they produce anti-freeze like some Antarctic fish?

[Ed.'s note: Fred's tongue seems to be in his cheek, is this catching? (see page 21) But the freezing question is curious, and *Cookia* would be happy to carry more on this. While we are posing curious questions - given their success at surviving my attempts to wash them off my lettuces, can *Cornu aspersum* (O. F. Müller, 1774) swim?]

One of Fred's tiny mates - *Georissa purchasi* (Pfeiffer, 1862)

A Pūtātara Story

by Kris Woods

Early in 2017, I received an email from Jerome Kavanagh. He was looking for a *Charonia* shell to make a pūtātara[1], a type of trumpet used by Māori. This is customarily made with a carved wooden mouthpiece and a bell made from a *Charonia lampas* (Linnaeus, 1758) or *C. tritonis* (Linnaeus, 1758). Jerome intended to use the pūtātara in New Zealand schools. I found a *C. tritonis* for Jerome and I arranged for him to collect it from our mailbox as we were away for the weekend.

In June 2018, Jerome contacted me again, asking for another *Charonia* shell as he needed to make another pūtātara. He had given the other one to a school kapa haka group. I finally met Jerome when he came to my home to collect a *C. lampas*. He was particularly pleased with this shell because it had been found in Parengarenga Harbour in Northland. Jerome always wanted to use a shell from New Zealand. During our conversation he modestly referred to himself as a musician. It was a pleasure meeting him as he was engaging and most interesting.

After Jerome left I did some online research and discovered to my surprise that he is a Grammy award -winning featured soloist and a musician of significant standing. He specializes in making and using taonga pūoro - traditional Māori musical instruments. He uses these to introduce Māori music, art and culture nationally and internationally. Jerome facilitates taonga pūoro workshops in New Zealand schools and museums.

[1] pū = to blow, tātara = knobbed triton/trumpet shell

[Editors' note: although *Charonia tritonis* is recorded in the New Zealand faunal lists, it does not occur on the New Zealand mainland and its presence at the Kermadec Islands remains to be verified. Many shell instruments are made using this species or *Cassis cornuta* and examples are on display at museums throughout New Zealand. While they may reflect the traditional style of the instrument, it is likely that only *C. lampas* was used by Māori.]

Top: A pūtātara. Photo: MAA Museum of Archaeology & Anthropology, Cambridge UK.

Centre: Kris and Jerome.

Bottom: *Charonia lampas* (Linnaeus, 1758) Photo: Andrew Spurgeon http://www.mollusca.co.nz

Chirality, survival and sex – a story of right-handed snakes and left-handed snails

by Pat Lakeman

Even in apparently symmetrical organisms, there is almost always some consistent deviation from absolute symmetry, either in their anatomy or their behaviour. When given the opportunity, many animals consistently use either their right or left hand (or foot, or paw) in preference to the other. Despite being a widespread feature, however, much about "handedness" – asymmetrical form or behaviour – and how it occurs is still a mystery.

Snail shells exhibit handedness – some spiral in a right-handed direction (dextral coiling), others have left-handed (sinistral) shells. And it isn't just the shells – the whole animal is reversed. This twisted form of handedness is called chirality. The genetic basis of this variability can be remarkably simple — in *Lymnaea stagnalis* (Linnaeus, 1758) chirality is determined by a single gene or a small set of genes that is inherited from the mother, with the right-hand twist form of the gene being dominant.

"Handedness" seems inapplicable, however, to completely limbless animals, so it is hard to imagine a right-handed snake. But in fact the internal anatomy of snakes displays considerable asymmetry, there being variations in size and position of a number of a snake's bodily organs.

One group of snakes in Southeast Asia (Family: Pareatidae) have developed a taste for *escargots* – they specialise in eating slugs and snails. And as most readers will know, dextral snails far outnumber their sinistral kin. Pareatid snakes have evolved asymmetric tooth arrangements and hunting strategies that are optimised for extracting prey from right-handed shells. The snake attacks from the left, grabbing the shell with its upper jaw and sticking its lower jaw into the gap, and its asymmetrical mouth parts have more fangs on one side than the other.

Top: Feeding behaviour of *Pareas iwasakii* (Maki, 1937)

Below: A skull specimen (dorsal view) of *P. iwasakii*, exhibiting half a dozen more teeth on the right side of mandibles than on the left before hatching.

To scale, scale bars 10 mm

Images: Nature Communications, doi:10.1038/ncomms1133

Dr. Masaki Hoso at Tokoku University and colleagues have done some interesting research in this area. The team presented dextral and sinistral snails to a panel of test snakes. The snakes had no problem eating their usual right-handed fare, but had real difficulty coping with left -handed shells. Size also mattered - the bigger the left-handed shell, the harder it was for snakes to extract their meal. Hoso et al then looked at the geographical distribution of snails with right-and left-handed shells and compared it with the geographical distribution of pareatid snakes. They found that the diversity of sinistral snails was higher within the range of the snail-eating snakes. The team also examined the molecular phylogeny of one snail genus – *Satsuma* - that co-exists with pareatid snakes, finding that in the presence of snakes, leftward coiling snail species had arisen independently multiple times within the genus. The frequency at which this has happened is unusually high, and is difficult to explain without invoking snake predation as a stabilising force. These results suggest that a right - left reversal in shell chirality confers a survival advantage to snails in these circumstances.

But not, perhaps, an unmitigated benefit. Land snails copulate face-to-face, and a snail with a reverse-coiled

shell has its whole body reversed - including the position of its genitals. This means that oppositely coiled individuals are anatomically incompatible when it comes to mating - mating between sinistral and dextral snails is almost impossible because their genitals are on opposite sides of their bodies. All snails have both male and female reproductive organs, and when both snails are dextral or both are sinistral, everything lines up nicely. When one is dextral and the other is sinistral, the genitals line up male-male and female-female.

When genetic differences between two populations of a single species get to the point where the populations cannot interbreed, new species are born. This process (speciation) is fundamental to evolutionary theory, but any genetic change that makes it hard to mate also makes it hard for an animal to pass on its genes. How can genes that induce reproductive incompatibility spread from one generation to another? From the work of Hoso and colleagues, it seems that pareatid snake adaptations – and the resistance to snake predation enjoyed by sinistral snails - serve to maintain the genetic change that gives rise to left-handed shells. In other words, the protection from predation outweighs the mating difficulties allowing chirality to become fixed, and the two groups of sinistral and dextral snails to become separate species and evolve their separate ways.

Left-handed love and right-handed offspring: A sinistral garden snail was found in a compost heap in Southwest London. It was sent to Dr Angus Davison in the University of Nottingham's School of Life Sciences, who has studied snails and snail genetics for over 20 years, aiming to understand the genetics of body asymmetry. Jeremy (the snail) became an international shellebrity (see his Twitter account @leftysnail) after a public appeal was launched to help find him a mate. His first companions - Lefty from Ipswich in England and a Spaniard, Tomeu from a Majorca snail farm – initially preferred each other rather than Jeremy and produced more than 300 tiny snail babies between them. Jeremy was finally able to produce offspring but, like their older half-siblings, they are all dextral. This is probably because the mother carried both the dominant and recessive versions of the genes that determine shell-coiling direction. It is far more likely that sinistral babies will be produced in the next generation or even the generation after that. Jeremy died in October 2017; his shell has been preserved for the University's natural history collection.

Jeremy (left) & Lefty (right)
Photo: Angus Davison, University of Nottingham

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Shells from the Seelye Collection

by Derrick Crosby

I first met the late Hunt and Molly Seelye on an Auckland Shell Club trip to Kawau Island about 50 years ago. We were all "young and keen" in those days. At that time, Jock Walker was the President of the Conchology Section of the Auckland Museum and Institute (CSAMI) as the Club was then known, and Jock had use of a beach house on Kawau Island that belonged to his boss, who owned Avondale Motors. That was our base for two or three days of shell collecting, dredging etc., and so I came to work and collect beside Hunt, and thereby met Molly. Thus a very long friendship commenced.

In those days, from cloudy memory, the Seelyes owned a hardware shop in Tauranga. Hunt was a returned serviceman who had served in, among other places, North Africa as a driver and dispatch rider. He never spoke of the horror of war but of the innovation that kept vehicles – mostly Jeeps and motorcycles - going through adversity. Those experiences were the origin of his excellent ability to drive his Landrover across sand hills and along Northland's west coast beaches. They moved from Tauranga to Northland, purchasing the old house beside the Pukenui wharf and, if I recall correctly, built the motel there. Hunt and Molly continued to live in the old house with a small shop attached, and the motel became the base for several CSAMI field trips in the north. The best trips were when a fishing boat was organised for dredging. I think it was Graham Clifford who ran the boat, and he along with Norm Gardner, Bob Grange, Hunt Seelye and myself, carried out quite a bit of dredging.

Hunt and Molly subsequently purchased land in Harbour View Road at Pukenui and built their retirement home there. Over the years we and other shell collectors visited whenever we could. Both Hunt and Molly had a keen interest in shells, so always visits were to both of them as they equally shared the joy of shells.

After the war Hunt had trained as a carpenter, and very good he was too. He became popular with the fishing launch fraternity for his skill and ability to make and repair woodwork on many launches, fishing boats, cray boats etc, thus his long and productive success with obtaining cray boat material.

Hunt and Molly regularly visited Australia to go shelling with, among others, Ena and Ceddy Coucum on various Great Barrier Reef camping trips. They also travelled quite a lot across Australia with Allan and Joan Limpus, and went often to Perth to stay with their daughter Lynda and her family.

In later years, due to decline in Molly's health, the Seelyes moved to Whangarei for better access to medical facilities. We saw a lot of them then, as they lived just around the corner from us. As time progressed they sold off various parts of their extensive shell collection. The cones were, as far as I recall, sold overseas, as were the cowries. Allan Limpus got the bulk of the volutes, and I think the pectens went to Henk Dijkstra, of The Netherlands, an international specialist in scallops (Pectinidae), glass-scallops (Propeamussiidae) and micro-scallops (Cyclochlamydidae). Ann and I purchased the remaining foreign Tonnoidea (tuns and cassids), and I think Bob Grange acquired most of the Columbariums and New Zealand land snails. After that Ann and I

APLUSTRIDAE: A tray of *Hydatina* spp. from the Seelye collection: The top row contains three *Hydatina physis* (Linnaeus, 1758), the largest measuring 65 mm x 52mm. Below are three *Hydatina albocincta* (van der Hoeven, 1839), the largest being 45 mm x 40 mm.

purchased the rest of the New Zealand collection, along with the cabinets. Hunt had been under pressure from a dealer to sell, but he did not want the collection to be broken up and sold piecemeal; nor did he want it to go to a museum. So much of the Seelye collection came to us where it remains, substantially as it was and available for anyone to come and view. A select few shells from the Seelye collection are featured in the accompanying photos.

Hunt taught us much about shells, their cleaning and preparation. He and Molly were a lovely couple, whom we respected greatly. Many a joyous holiday in the Far North was had with them, and many pleasant memories have been recalled in writing this story.

Above: BULLINIDAE: *Bullina vitrea* Pease, 1860. Live collected at Te Hapua, Parengarenga Harbour, Northland. 18 mm.

Above: TEREBRIDAE: *Perirhoe circumcincta* (Deshayes, 1857. About 40 mm. One of four specimens in the Seelye collection, all dredged by Graham Clifford, Deepwater Cove, Bay of Islands, at about 40 m.

Editors' picks

Sand art at Waikanae Beach, Kapiti Coast.

Photo Eric Scott

A Vietnamese 'table d'hote' at the Cresswell household - shells collected on Pete and Dee's trip to Vietnam in September 2017.

Photo: Pete Cresswell

A shell club year

by Pat Lakeman

A lot goes on in a shell club year – and 2018 is far from over as I write this. Since about half our club's membership lives beyond the wider Wellington region, here is a taste of what the locals have been up to.

Our President Jenny Raven is one of those who travel around quite a bit, and she looks for shells whenever she can. Her finds can be interesting! Jenny reports: "An unexpected find for me at Taupiri Bay earlier this year was Rosemary Hill - general secretary of the Conchological Society of Great Britain and Ireland - on the beach looking for shells. Rosemary was holidaying in New Zealand and even carrying a copy of *NZ Seashells Visual Guide* (by Jenny Raven and Selwyn Bracegirdle) to follow the recommended collecting spots in it, which is why she was on Taupiri Bay. I said "it's not often you find someone you don't know looking for shells on Taupiri Bay" – we shook hands when we realised who each other was and exchanged information on our respective interests and organisations. What a chance coincidence – I was on my way to Auckland and Rosemary had only a couple of hours there. So there we are - Taupiri Bay continues to offer up interesting shell-related finds."

Rosemary Hill & Jenny Raven

Carolyn Krebs, Pat Lakeman, Carol Bracegirdle, Tony Tomlin & Jenny Raven on a blustery day at Plimmerton. Photo: Selwyn Bracegirdle

[Ed: See next page (box) for more from Jenny about the Conchological Society of Great Britain and Ireland.]

Club members sometimes look for shells together – you can read about some of their trips elsewhere in this issue. No major club field trips were organised this year but suitable tides on the Kapiti Coast at Easter prompted a day trip to Plimmerton. Easter weather is often unreliable and sure enough the trip was on the worst day of the weekend. Nevertheless half a dozen hardy souls walked the beach more or less together and most were rewarded with a shell or two – fresh dead *Cantharidus opalus* (Martyn, 1784) were probably the best finds of the day. Closely followed by the hot coffee at the local café afterwards!

Planning for the New Zealand Shell Show in Wellington on 1 and 2 December included a fund-raising garage sale, and our chosen venue was the hall at West Park School in Johnsonville. Mary Agnes Wotton organised the venue and in the process she learned that some of the school children would like a presentation about shells. Always innovative, Mary Agnes asked about the children's backgrounds and ethnicities, and set herself the challenge of including a shell from all their home nations in her display. This was quite a task as there were 18 different countries involved. Mary Agnes managed to cover 14: China, Singapore, Philippine Islands, Timor, Samoa, Brazil, Korea, Hong Kong, Croatia, Cambodia, South Africa, Israel, Sri Lanka and India. She also took along plenty of New Zealand specimens and the children's enjoyment was evident not least from the comments they wrote on her thank you cards – "Mary you rock" was one tribute along with various versions of "thank you for showing us your beautiful shells". By way of thanks for Mary Agnes' presentation the school waived the fee for our hire of the hall, and the garage sale made a significant contribution to funds for

the Shell Show.

The club's monthly meetings are informal and held mostly at members' homes. Thanks to Dr Bruce Marshall and Museum of New Zealand Te Papa Tongarewa , we were hosted in June at Te Papa where we were able to view the National Collection. This really is a special treat even for those of us who have seen it before – so many shells, so little time!

Mary Agnes with some of the happy kids from West Park School in Johnsonville.

The club's Facebook page continues to thrive thanks in no small part to administrators Kerry Walton and Jason Pierce. I particularly like the posts about shell finds or shells from members' collections, but have also enjoyed the variety of topics including ocean currents, shell art and snail teeth among others! And my favourite post so far? No contest, it's Andrew Spurgeon on 14 September 2018: "Saw this little critter walking over a rock in a shady pool today. Karikari Peninsula, Northland." He didn't mention what it was on purpose, saying "It looks very different when alive to what the shell looks like when washed up on the beach. Any guesses?" It wasn't long before it was identified: *Ellatrivia merces* (Iredale, 1924).

Mid-winter is a great time to escape to warmer climes and July just happens to be when the Townsville and Keppel Bay shell clubs hold their shell shows in Queensland, Australia. We were well represented at both shows this year with Kris and Roger Woods, Heather Smith and Jenny Raven travelling to Townsville and Heather, Jenny and Pat Lakeman attending the Keppel Bay show in Yeppoon.

Undoubtedly the biggest event of our club year will be our own New Zealand Shell Show 2018 (1-2 December, Kilbirnie, Wellington) by which time this edition of *Cookia* will have been printed. By the time you read this, the busy organisers will have time to relax and reflect on what is sure to be another great event.

Left: One of Pat Lakeman's displays at the 2018 Keppel Bay shell show - smart enough, but not a winner!

Right: Two of Andrew Spurgeon's photos posted to the Club's Facebook page in September, 2018 - the almost-cuddly *Ellatrivia merces* (Iredale, 1924).

For those interested to know more about the Conchological Society of Great Britain and Ireland, their website http://www.conchsoc.org advises the Society was founded in 1876 as a registered charity which anyone may join. The Society's objective is to promote the study of mollusca in its widest aspects for the benefit of the public. The Society achieves this through meetings and workshops, publishing the Journal of Conchology and Mollusc World, maintaining records of north east Atlantic marine molluscs and British and Irish non-marine molluscs to provide a picture of the changing distribution of the fauna and by making grants for projects promoting the objectives of the Society. The Society is governed by a Council comprising a President, general secretary, membership secretary, program secretary, treasurer, two editors, two recorders, a conservation officer and a webmaster.

Notes on NZ Collected Species

Monodilepas diemenensis

Finlay, 1930

Found near Rarawa Beach, Northland. 9 mm.

ANDREW SPURGEON

Proxicharonia palmeri

(Powell, 1967)

This specimen measures 55 mm, from craypot, Three Kings Islands, 2018.

KEVIN BURCH

Wainuia urnula (Pfeiffer, 1855)

This species attains particularly large size in lowland podocarp forests to the east of Levin, where amphipods, worms and snails abound. *W. urnula* feed primarily on amphipods, with worms forming a small component of their diet (Efford 2000). Traces of a variety of invertebrate remains, including other landsnails, have been found in the scat of congeners (Efford 2000). Other comparably-sized New Zealand rhytidid genera feed primarily on snails. This c. 28 mm example of *W. urnula* was observed feeding on a recently hatched *Powelliphanta traversi* (Powell, 1930) under fern litter in bush near the Ohau River. This assemblage does not appear to be fortuitous as the prey snail was strongly adhered with, seemingly, part of the foot of the *W. urnula* inside the aperture of the former.

JASON PLAISTED/KERRY WALTON

Reference: EFFORD, M. 2000. Consumption of amphipods by the New Zealand land snail *Wainuia urnula* (Pulmonata: Rhytididae). *Journal of Molluscan Studies*, 66, 45–52.

Coralliophila squamosissima
(E.A. Smith, 1876)

Hermit-crabbed in rock-pool, Tapotupotu Bay, Northland, January 2018. About 22 mm

ANDREW SPURGEON

Diloma nigerrimum
(Gmelin, 1791)

Feeding on decaying algae (*Durvillaea* sp.) at mid-tide, Aramoana, Otago. This species is also found in South America.

KERRY WALTON

Isara carbonaria (Swainson, 1822)

Found in shell drift at Green Point, northeast of Wellington, November 2017. 61 mm.

JASON PLAISTED

Glaucus atlanticus

Forster, 1777

Stranded in a rock pool at Paxton Point, Great Exhibition Bay, Northland, December 2017.

ANDREW SPURGEON

Ardeamya spenceri

(Suter, 1907)

Hokio Beach, near Levin, December 2017.
42 mm.

JASON PLAISTED

Amborhytida forsythi (Powell, 1952)

Found under wandering dew near Otaika, west of Whangarei, January 2018. Often considered 'rare', this species is even more common west of Whangarei than the larger and co-occurring congener, *A. dunniae* (Gray, 1840). *A. forsythi* differs from similar-sized *A. dunniae* in being more tightly coiled, in having a smaller protoconch and in having the last adult whorl descend a little into the aperture; comparably sized *A. dunniae* are sub-adult so the final whorl does not descend.

ERIC SCOTT / KERRY WALTON

Semicassis labiata

(Perry, 1811)

Approx 70 mm; washed up with animal, 24 July 2018, about 500 m from the mouth of the Whakatane River, Coastlands, Whakatane.

ANN & DERRICK CROSBY

Aplysia parvula

Mörch, 1863

Found in a shallow rock pool at Tapotupotu Bay, Northland. About 40 mm.

ANDREW SPURGEON

Trimusculus conicus

(Angas, 1867)

Near Rarawa Beach, Northland.

ANDREW SPURGEON

Dicathais orbita
(Gmelin, 1791)

Adults and egg cases. Scott Point, Northland. December 2017.

ANDREW SPURGEON

Zemelanopsis trifasciata
(Gray, 1843)

With egg mass, Hatea River, Whangarei, January 2018. Note *Latia lateralis* (Gould, 1852) in the foreground.

ERIC SCOTT / KERRY WALTON

Australian Carnivorous Land Snails

by Eric Scott

We recently went to Melbourne to meet up with our eldest daughter to celebrate her 40th birthday. It was a family affair, as our other daughter and her family came as well. As part of the trip, we had planned to drive from Melbourne to Adelaide via the Great Ocean Road and this included the rest of the family coming along.

On the way, we stopped at Apollo Bay to visit Maits Rest, a walkway in the Great Otway National Park. It was popular with many tourists who were turning up by the bus load – most were guided parties. We attached ourselves to one of those. I was amused to hear the guide going on about one of their very rare carnivorous snails that lived in the park. It was about the size of our *Wainuia urnula* (Pfeiffer, 1855), perhaps a little bigger. From what the guide was saying, these things were very scarce in the park. My grandson

Callum, the Australian one, asked me where one would likely find these things. So I told him that they would probably be under dead fern leaves. He then toddled off. About 10 minutes later he came back with fi live ones! We kept one to photogra and returned the rest. Keeping it overnight, it eventually emerged sc got a couple of shots of it and returned it to the same park. On returning to New Zealand I did a bi of research and found that it was or of four carnivorous snails in Austra belonging to the genus *Victaphanta* This particular one is *Victaphanta compacta* (Cox & Hedley, 1912), more commonly known as the Otw Black Snail. The only other one livi on the mainland is the Gippsland Black Snail, which is also found in Victoria. The other two species are found in Tasmania.

Caring for the Environment

A personal view, with tongue sometimes in cheek, by our Kaikoura correspondent, Bev Elliott

2014: I don't remember the date, only that it was an election year. We had our (Kaikoura) marine reserve at last, after a battle of maybe 20 years. Every last plankter [Ed: yes, that is the singular of plankton], every scrap of seaweed, every bacterium, every grain of sand was totally protected. Since the area was absolutely inaccessible anyway, it didn't affect my enjoyment of beach walking and collecting, though I did feel disgruntled that even scientists with deep sea equipment would not be allowed to explore this deep sea wonderland and collect a few of its inhabitants for scientific study. I like to know about sea creatures, whether or not I can personally collect or observe them.

The whole of the Kaikoura coast was partly protected at the same time. We had to learn the differences between a marine reserve (no mining, fishing or harvesting of any kind allowed), *rahui* (a form of tapu restricting access to, or use of, an area or resource by unauthorised persons), *mataitai* (in which commercial fishing is prohibited and which protect customary fishing beds) and *taiapure* (locally managed recreational fishing areas). It didn't affect my activities. I had never inherited my Dad's love of fishing – too boring – I could never catch a thing. The usual seafood molluscs are very uncommon here; there are no mudflats for cockles and pipis, and mussels are few and small. I've never caught a crayfish, and paua patties were a treat only about twice a year, so all the new rules made little difference to me.

At about the same time as all this extra protection was put in place, another sort of activity hit the headlines – FRACKING and drilling for offshore oil! [Ed: Hydraulic fracturing aka fracking makes it possible to extract oil or gas from dense rock.] Wealthy miners want to sail up and down our coasts, letting off sonic booms, drilling for oil, and goodness knows what else. Conservationists raised protests – the noise could drive the whales away, there could be oil spills that would kill everything, it could cause earthquakes! Protests took place around the country and in Kaikoura included a few hardy locals who donned swimming togs and smothered their bodies with "oil" and marched through town on a freezing cold day to show everyone what it would be like being in the sea in an oil spill. More warmly clad folk (me included) marched with them. But in the end, offshore exploration permits have been granted off the east coast of the North Island from south of Hawke's Bay to south of Wellington, and off the South Island coast from Waimate to south of Stewart Island. Plus all the activity off Taranaki! Risking the destruction of some of the best things in life, just for money.

14 November 2016: WHAM! In just two minutes the earthquake changed many people's lives forever. A lot of us got off lightly, with very little loss or damage, but many lost homes, businesses, income, everything they had worked for. And the ongoing stress continued for months, maybe forever for some folk. Depending on one's profession, some were and are inundated with more work than they could possibly cope with, whilst others lost their work and income completely. For me, one way of dealing with the stress was to turn it all into a big adventure, an addition to my hobbies and interests. I had often wondered what effect a disaster (especially a tsunami) would have on marine life. Now was my opportunity to do some collecting, observing and listing, and find out. I don't think the tsunami was big enough to have much effect on our marine life. What with low tide, and uplift of one to two metres, I didn't see any sign that the tsunami had come beyond the beach. The uplift would have killed a lot of creatures. The more mobile ones would have crawled down to the water level, but many creatures could not or did not. Paua (*Haliotis iris*, Gmelin, 1791) were apparently among the species that did not. Many people were involved in trying to rescue them, while others were involved trying to stop them and threatening the rescuers with hefty fines if they didn't leave the paua alone. Some of the rescuers knew exactly how to handle paua, and would have done a good job, but others would have inadvertently done more harm than good, and killed the

very paua they were trying to save.

Cracked water pipes let a great deal of pollution into the sea, and everything died around here, and notices appeared warning about contaminated water. The local surfers weren't taking any notice – they were having a ball at the town beach right below my place, and presumably got away with it. But as I reported in last year's story, I found out the hard way that the contamination was real.

It was almost a month after the earthquake that I was first confronted by a Fisheries Closure Notice, saying it was illegal to have shellfish or seaweed in one's possession. On enquiry to a Fisheries Inspector, there didn't appear to be anything wrong with picking up dead shells. I couldn't get a clear answer about shells still containing a dead animal, or shells still alive but washed ashore and obviously doomed. By the end of December the ban on fish and crayfish was lifted, but the ban on shellfish and seaweed was to remain in place until February. In February it was extended to November. In early June I was part of a group that heard a talk by a different Fisheries Inspector, who distributed brochures of Fishing Rules for Kaikoura Marine Area, with daily bag limits of huge quantities of shellfish that are not even found here. Apart from a "subject to change without notice" proviso, there was no hint that I couldn't take anything I wanted. So of course I was happily continuing with my collecting and observing until 28 June, when an article in the *Kaikoura Star* headed "Paua ban could be in place for a decade" hit me like a sledgehammer. In one sentence they are talking about paua. In the next sentence they are talking about ALL shellfish and seaweed species from Cape Campbell to Kaikoura. What on earth is going on? So I go and talk to yet another Fisheries Inspector who tells me ALL living marine creatures are protected, and "shellfish" includes urchins, starfish, crabs, barnacles and everything else. I may walk along the tide line and pick up rubbish, firewood and dead shells, but if he sees me out at low tide, he'll be after me. (Not sure if the latter bit was serious or joking.) Nor could I get any answer (again) about shells washed ashore with dead animals, or shells washed ashore with live animals and no chance of surviving. As for seaweed, I can live without the odd bagful for my compost bin, but for those who live right beside the beach, the constant smell of vast quantities of rotting seaweed must have been very hard to bear, in the weeks and months following the 'quake. And even the Council were not allowed to remove any of it, whe folk were begging for at least some o it to be taken to the dump where it could be made into compost. No, we have to obey the letter of the law, no forgetting the threat of a $100,000 fine for any person found with seaweed or shellfish in their possession. No that is not a misprint; that is up to one hundred thousand dollars! (Got to deter those shell collectors somehow!)

The little triphorid shell which Bev was so happy to find a specimen of in her shell grit - *Monophorus fascelinus* (Suter, 1908).

Photo: Jenny Raven & Selwyn Bracegirdle in *New Zealand Seashells Visual Guide* 2010.

11 August 2017: I hear on Radio New Zealand news that the powers-that-be have given the go-ahead for 35 years of mining ironsand from the seabed off the South Taranaki coast. Everything will die! And will it foreshadow approvals for seabed mining elsewhere? By the time these guys have finished destroying the environment, shell collectors will be able to walk the beaches without fear of finding a treasure that it is illegal to collect – there won't be any shells left. Gardeners won't need to go looking for a wee bit of illegal dead seaweed for their compost bins – there won't be any seaweed left. Fishermen won't have to worry that they might exceed their quota, or tak an undersized specimen – there won' be any fish left. Fisheries Inspectors will be out of a job, but not for long, they can get jobs with the mining company instead and help to destroy any creature that might have manage to survive. DoC won't have to worry about endangered birds, tourists won't have any whales to watch or seafood to eat, but they can enjoy throwing their rubbish on the beache – Bev won't be around to pick it up! We can guess where she will be, as every bag of beach rubbish seems to contain a sandhopper or two

(shellfish, by the latest definition!?) and a few scraps of seaweed … what further proof of guilt is needed? If the Fisheries Closure is finally lifted, maybe a decade ahead, a poor old 85-year old might totter out of jail and back to the beach to see if there is anything left …

Meanwhile it's election year again ….

Sometime around September 2017: I gave a little whoop of excitement when my last bag of shell grit yielded a little left-handed Triphorid, *Monophorus fascelinus* (Suter, 1908) I think. I can't remember finding one since my days on Great Barrier Island, when they were in the genus *Notosinister*.

13 April 2018: Radio New Zealand news reports that the government will not grant any further offshore oil and gas exploration permits. Just as I was starting to cheer, the newsreader added that there are already 31 active oil and gas exploration permits, of which 22 are offshore and cover an area of 100,000 sq kms (nearly the size of the North Island). The permits run as far out as 2030 and could go longer under a mining permit …

June 2018: Consultation is underway on a proposal by local Maori for extension of the rahui at Wakatu Quay, and a new rahui at Mudstone Bay, both in South Bay, Kaikoura. The latter is one of my favourite spots, where even picking up dead shells might be forbidden. But there is greater emphasis on proposals for coastal development further north, and folk march 15 km into Kaikoura to confront the Council.

12 July 2018: The manager of the Kaikoura paua factory mentions that anyone who collects paua for food (which is forbidden anyway) is not allowed to sell the empty shells to him. The politically correct way to dispose of paua shells is to take them to the rubbish dump.

Somewhere in all of this: Radio New Zealand news reports that someone is in trouble for swimming in front of a big oil drilling ship, in an effort to stop their activities …

[Ed: As far as we are aware, Bev remains at large.]

"Fossilised" Coral

by Eric Scott

On returning to New Zealand from a recent trip to Australia, we had declared that we had shells and fossils, so were put into the queue to have our bags searched. The Auckland customs officers were basically okay with what we had until they opened the box containing fossils. They immediately homed in on a piece that looked to them like fossilised coral. It took some convincing but finally I managed to get them to accept that it was only a piece of petrified wood. We had gone out to "The Obelisk" at Robe, a coastal town at the Adelaide end of the Great Ocean Road. I noticed in the carpark that they had used a lot of quarried rock with fossil shells in it including fossilised wood. I picked out a few of the choice pieces to bring back for our collection. "The Obelisk" is on a coastal promontory and was used for warning ships of nearby reefs. The rocky tidal platforms were actually petrified forest, similar to Curio Bay in Southland.

The piece of petrified wood & fossil shell found in the carpark, and (below) the The Obelisk and carpark at Robe, Victoria. Photos: Eric Scott

Customs were satisfied with our explanation and let us keep them.

Rare or medium-rare?

by Kerry Walton

This title comes from a chapter heading by the late science fiction author Douglas Adams and biologist-turned-author Mark Carwardine, from their thoroughly worth reading book *Last Chance to See*. During the course of his world travels, whilst visiting species on the brink of extinction, Douglas made the observation that rarity is relative. In the context of shell collecting and science, terms such as 'rare' or 'uncommon' are casually tossed about all too frequently, and are often a misnomer. Here, I explore some of these terms and present the contention that many of our 'rarest' shells are better considered rather common!

In an article published in Cookia in 2004, Elliot Dawson posed the question: "*What is the rarest shell* (species) *in New Zealand?*", to which Bruce Marshall offered the answer "*Any species known from just a single specimen*". This is a logical answer, but the question is subjective. This answer might have been even more appropriate were the question rephrased "*What is the rarest species in collections?*" For a long time, it was said that the answer to this question was *Provocator mirabilis* (Finlay, 1926) since few specimens were known until the expansion of deep-water trawl-based fisheries in the 1970s and 1980s. However, no-one would suggest that this shell is 'rare' any longer, neither is there any reason to believe that the number of individuals in existence has increased during the last 100 years. Has its rarity decreased *per se*?

Expressions of rarity reflect several interrelating factors:

- The absolute number of individuals of any given species (or form) in existence.
- The absolute number of specimens in collections (with a further distinction worth making between private and museum collections).
- The density and distribution of populations.
- The accessibility/ease of sampling of the habitat.
- How well known the habitat or region is.

The little mussel *Adipicola osseocola* Dell, 1987 is known only from off eastern New Zealand on decomposing bones in depths of several hundred meters. This species has been collected fewer than a dozen times, reflecting both the relatively few trawls in suitable depths in this region and the scarcity (measured by density rather than absolute number) of suitably decayed large vertebrate remains on the sea-floor in the reg However, it is known from many hundreds of specimens, but few, i any, in private collections. It migh fairly be considered rarely encountered. Perhaps you could al say that it is rare in private collections. However, it is reasona well represented in museum collections, and surely it is not a ra species when, in all likelihood, the number in their millions out there, mostly safe from our pesky trawls! The two *Acesta* species recorded fi New Zealand are more widely distributed, but are similarly limite to a seldom sampled habitat type: coral banks on the continental slop Such areas are typically avoided by deep-sea trawlers to prevent damag to the trawl nets or to the corals themselves (many areas are off-lim to bottom trawling altogether). As with *Adipicola* and *Terua* species, when collected, *Acesta* species are normally collected in reasonable numbers.

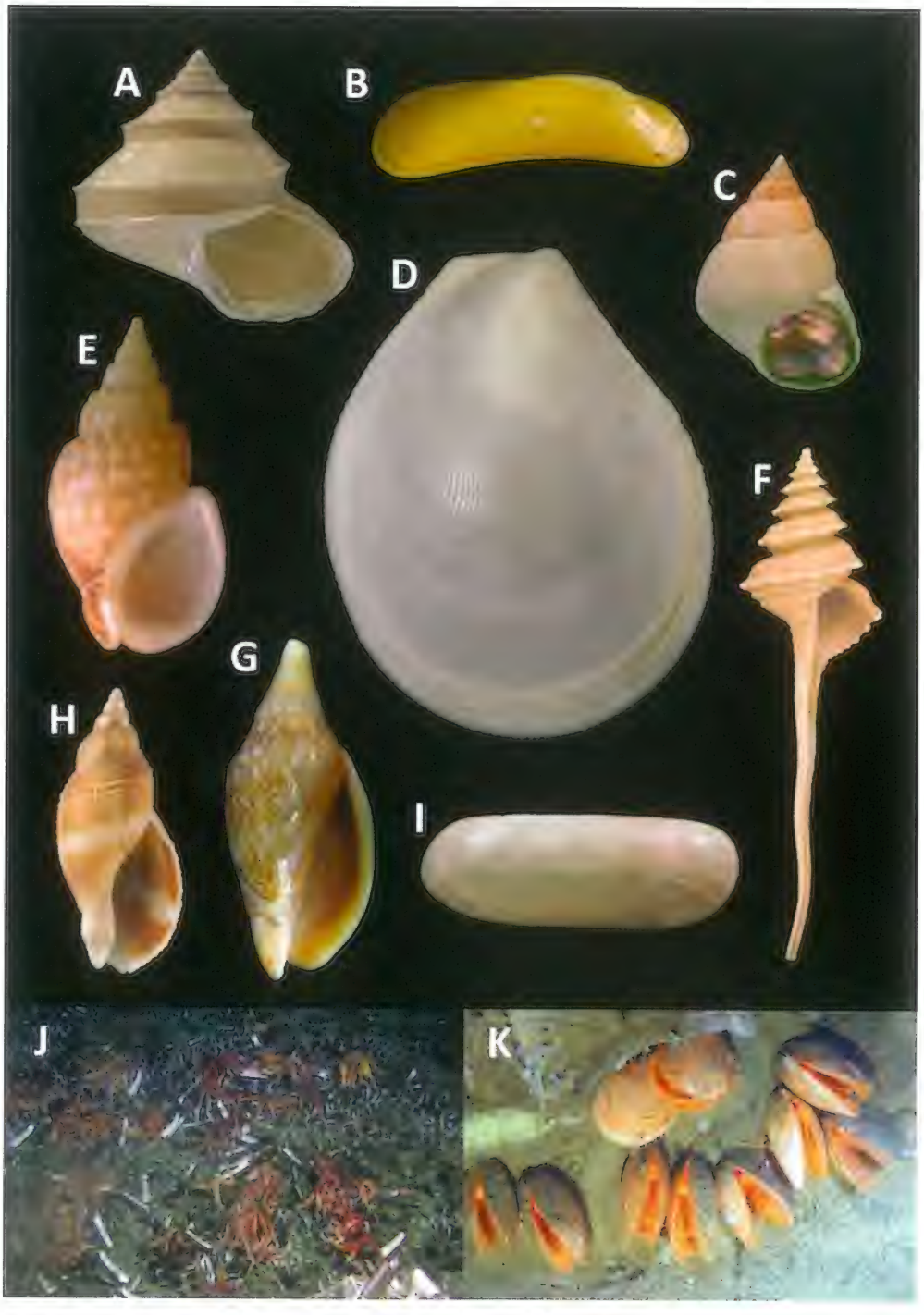
Many taxa have very localised or difficult to access distributions but occur in great abundance. Examples of what some might consider to be rare species that are 'rare' only for this reason include *Maurea benthicola* (Dell, 1950), *Cominella olsoni* (Dell, 1956), *Micrelenchus burchorum* (B.A. Marshall, 1998) ar *Scutellastra kermadecensis* (Pilsbry, 1894). Species endemic to off-shore features and islands, such as the

***Adipicola pacifica* (Dall, Bartsch & Rehder, 1938) *in situ* on whale vertebra trawled from several hundred metres water depth off Japan.**

(Miyazaki Lab: http://www.ccn.yamanashi.ac.jp/~miyazaki/sinkai2-1.html).

Not to scale.

A, C, F & H are images of specimens at the Museum of New Zealand Te Papa Tongarewa, reproduced from the Te Papa website under CC BY-NC-ND 4.0. Thanks to Dr Bruce Marshall, Collection Manager as well as Raymond Coory and Jean-Claude Stahl, photographers.



A. *Venustatrochus youngi* B.A. Marshall, 2016, known only from this single specimen (M.158310).

B. *Terua arcuatilis* (Dell, 1995); seldom collected as these live on sunken bone, but often taken in huge numbers when whale skeletons are caught up in trawl nets.

C. *Micrelenchus burchorum* (B.A. Marshall, 1998), common at the Three Kings Islands, a hard-to-get-to place such that these are rare in private collections (M.127017).

D. *Acesta saginata* B.A. Marshall, 2001; seldom collected as deep-sea coral habitats are typically avoided, but several are often collected at a time when a large coral slab is snagged in a trawl.

E. *Cominella olsoni* (Dell, 1956), common on Mernoo Bank, but this is only a tiny part of the Chatham Rise.

F. *Coluzea wormaldi* (Powell, 1971), common in parts of the Bay of Plenty but rarely collected in good condition (M.183810).

G. *Alcithoe davegibbsi* Hart, 1999; not that rare in Spirits Bay, very rare in collections.

H. *Uttleya ahiparana* (Powell, 1927), rarely taken by conventional means but abundant in Pakiri sand-replenishment dredgings (M.131711).

I. *Solemya puata* Walton, 2015, one of the most abundant and wide-spread molluscs in New Zealand (M.316903).

J. *Gigantidas gladius* Cosel & B.A. Marshall, 2003 *in situ* in c. 300-500 m on Rumble V Seamount (NIWA; joint New Zealand-USA NOAA Ring of Fire Expedition 2005).

K. *Acesta cryptadelphe* Gagnon, Kenchington, Port, Anstey & Murillo, 2015 *in situ* off Newfoundland in much the same habitat as the New Zealand species (Jean-Marc Gagnon, http://www.sci-news.com/biology/science-acesta-cryptadelphe-giant-file-clam-03213.html).

Kermadecs, Three Kings and Subantarctic Islands, are usually described as 'rare' by shell collectors. This reflects the difficulty in obtaining such material for private collections rather than indicating actual abundance or density measures. At Raoul Island, *S. kermadecensis* liberally coat the low-tide and shallow sub-tidal rocks and could be collected easily and in great number, providing one has access to the islands and the necessary permits.

Uttleya ahiparana (Powell, 1927) is often considered to be a common species because many private collections have multiple examples. However, this is mainly due to the sand replenishment program for beaches on the east coast of Auckland – an unusual and somewhat extraordinary set of circumstances. This program constituted many hundreds of thousands of cubic metres of sand being suction-dredged from approximately 40 m off Pakiri Beach and then shipped by barge to Auckland and deposited on many of the more popular beaches for aesthetic reasons. Within the translocated sand were innumerable shells, including thousands of *U. ahiparana*. The species had been collected only about a dozen times before that, mostly as single specimen lots. I do not mean to suggest that it is rare. Instead, that it is rare or difficult to acquire under normal circumstances. It has a relatively wide distribution encompassing much of the New Zealand mainland, so presumably they exist in decent numbers, but their habitat is unknown. Possibly they live deeply buried in the sediments, maybe in the burrows of prey species, accounting for their very rare appearance in dredged samples. Where a habitat is difficult to sample, such as rocky substrates below SCUBA depths or buried deeply in sub-tidal mud, such species tend to become very rare in collections. Without a ROV or submersible, pleurotomariids and hydrothermal vent mussels, for want of a couple of examples, are very seldom acquired indeed – one would have to do a lot of dredging and risk losing a lot of expensive gear, probably in protected regions, in order to obtain fresh specimens. But these are not necessarily rare *in situ*.

Cones, cassids and volutes are usually most active at night, and so, are less often encountered by divers. *Thracia vitrea* (Hutton, 1873) is abundant within Wellington Harbour, occurring, in places, at densities of several per square meter. However, few collectors have taken specimens themselves, as few collectors seem to be dredging these days, and the shells very rarely wash-up on beaches due to the depths within sub-tidal mud in which they live in sheltered areas. These examples show how sampling methods and biases can influence perceptions of rarity *in situ* and rarity in collections.

Might juvenile *Cornu aspersum* (Müller, 1774), the common introduced garden snail, be considered 'rare' simply because there are few, if any, in private collections? There are quite proba more examples of *Tonna tankervi* (Hanley, 1860) or *Semicassis roy* (Iredale, 1914) in private collectio than there are of *Paphies australis* (Gmelin, 1791), the humble and common pipi! The number of specimens in collections provides poor proxy for true rarity. Are all species that live on yet-to-be-sam seamounts 'rare' simply because exist in collections yet? Species m be common and widespread but almost absent in private collectio because they remain to be describ as was the case with *Diloma durvillaea* Spencer, B.A Marshall Waters, 2009 prior to its recogniti and description; or because small, terrestrial and fresh-water species often less well represented in priv collections in New Zealand.

Whilst good specimens come up infrequently, *Alcithoe flemingi* D 1978 and *Coluzea wormaldi* (Pow 1971) are perfectly common in seldom-fished parts of the Campb Plateau and the Bay of Plenty respectively. Small species or spe that occur below normal fishing depths (to ~1000 m) are even less common in private collections. Despite this, *Tritia ephamilla* (Watson, 1882), *Enixotrophon maxwelli* (B.A. Marshall & Houa 2011) and *Solemya puata* Walton 2015 are examples of some of the must numerous shelled mollusc species to occur in New Zealand. wonder if anything you have labe 'rare' might better be considered 'medium-rare'.

Reference:

DAWSON, E. 2004. *Is a rare shell really rare? Some valedictory thoughts on deep-sea collecting.* Cookia, Vol. 16, 75. Wellington Shell Club.

Trip to Fiji June 2018

by Bert van Tiggele

In June 2018 my wife Jenny and I agreed to visit Fiji, as a reward for our 40 years of marriage. It was our first visit to the Melanesian or Polynesian islands.

Map credit: Museum Victoria

Fiji is an archipelago of more than 330 islands situated on the eastern edge of the group of countries known as Melanesia. Fijian history is long. It was settled some 3000 years ago by the Lapita people who travelled across Melanesia and Polynesia and are the ancestors of the Māori people. The Lapita people had recognisable pottery, fragments of which have been found on Fiji's main island, Viti Levu, and some of the smaller islands. Relatively recent DNA analysis has helped to clarify the ancestry of native Fijians and the origins of the Lapita people in south-east Asia.

The Dutchman Abel Tasman was the first European to discover Fiji, in 1643, followed by James Cook. In the 19th century the English transferred many Indian people to Fiji to work in the sugarcane industry. They brought the Hindu culture to Fiji and Indo-Fijians are now about 37% of the total population.

Jenny and I departed on a flight from Christchurch and after four hours we landed at the nice, newly built airport at Nadi, Fiji's 3rd largest settlement. We wanted to see as much as possible of Viti Levu and the second largest island, Vanua Levu, both of which we visited. We did most of our travelling by the local bus system, which was simple and well organised. Fiji's population is about 900,000; with about 70% of that on Viti Levu, which covers about 10,000 square kilometres. Our bus trip around Viti Levu took us a total of 18 hours, during three days.

The Fiji archipelago is of volcanic origin. The two largest islands are covered with forest in the higher regions and farmland in the lower regions. The settlements are mostly small, with the two cities of Suva and Lautoka on the coast of Viti Levu. Somewhat disappointing was that on both islands there were not as many nice sandy beaches as I had expected, and when there were, they were mostly occupied by holiday resorts.

Above: Lapita pottery. Photo Fiji Museum.

Below: *Callistocypraea aurantium* (Gmelin, 1791)

Suva is the capital and is the location of the Prime Minister's residence and the Fiji Museum. We visited this well maintained museum and saw in one of the showcases, the beautiful "Golden Cowrie", *Callistocypraea aurantium* (Gmelin, 1791). Also called Buli Kula, this shell once adorned the kings of Melanesia, and they were used as status symbols. Their beauty and apparent rarity made them highly after sought by museums and private collectors. Their cryptic nature and inaccessibility kept this species safe for a while, but once it was discovered they are nocturnal and inhabited the outer reefs at depths of 30 to 40 metres, they were targeted for the international shell trade. In some areas divers have collected them in great numbers, driving prices down and causing local populations of the species to plummet. Conservation plans are being considered in some areas of the southwest Pacific and Indian Ocean range, but so little is known about their biology, that current plans may not be effective.

Being a shell collector, I collected some of the beautiful shells from the few beaches we visited. Wailoaloa Beach near Nadi had a good sandy beach for collecting shells. Among the species I could collect were:

Jenny on Nadi Beach. Photo: Bert van Tiggele

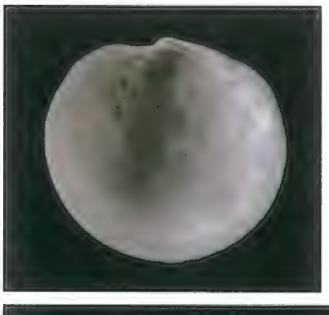
GASTROPODS

Architectonica taylori (Hanley, 1862), *Canarium mutabile* (Swainson, 1821), *Conus ebraeus* Linnaeus, 1758, *Conus eburneus* Hwass in Bruguière, 1792, *Conus generalis* Linnaeus, 1767, *Conus litoglyphus* Hwass in Bruguière, 1792, *Conus virgo* Linnaeus, 1758, *Epitonium philippinarum* (G. B. Sowerby II, 1844), *Liotinaria peronii* (Kiener, 1838), *Melampus fasciatus* (Deshayes, 1830), *Monetaria moneta* (Linnaeus, 1758), *Neripteron violaceum* (Gmelin, 1791), *Pyramidella dolabrata* (Linnaeus, 1758), *Talostolida teres* (Gmelin, 1791), *Vexillum subdivisum* (Gmelin, 1791).

BIVALVES

Barnea manilensis (Philippi, 1847), *Euanodontia ovum* (Reeve, 1850), *Gafrarium pectinatum* (Linnaeus, 1758), *Lioconcha castrensis* (Linnaeus, 1758), *Quidnipagus palatam* Iredale, 1929.

I thought that New Zealand's biosecurity laws might make it difficult to bring my shells home, and that it could be a good idea t send my cleaned shells home post. But when I tried, the postman in Labasa (on Vanu Levu) made it clear I must fi get permission from the Biosecurity Department of F Labasa. After visiting three different addresses for this permission and taking picture my shells, the advice was to visit another office and show my shell again, plus pay an extra fee for a permit to transfer them. After the hurdles, I decided not to send my shells by post! But my desire to t home some of the nicely coloured Fijian molluscs was too high. I brought a selection of the collecte shells to New Zealand and report them at the airport for inspection. After a double check late at night Christchurch airport, my shells w home, and are now in my collecti



Clockwise from top left: *Euanodontia ovum* (Reeve, 1850); *Quidnipagus palatam* Iredale, 1929; *Conus ebraeus* Linnaeus, 1758; *Barnea manilensis* (Philippi, 1847); *Vexillum subdivisum* (Gmelin, 1791). Photos: Bert van Tiggele

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https://teara.govt.nz/en/pacific-migrations

Nom d'un nom! Or "Yes, Virginia, taxonomists do have a sense of humour ..."

by Pat Lakeman

Aspects of shell names are the subject of numerous stories – some learned, some humorous - in previous issues of *Cookia* and elsewhere. I have always liked it when a specific name for a shell has discernible meaning. Equally I appreciate those authors who, when naming a species, include in their published papers a few words about the derivation of a chosen name. Many species are named after people or places, and there are many sensible descriptive names such as *Atalacmea fragilis* (G.B. Sowerby I, 1823) which is indeed a fragile NZ limpet in the family Lottiidae. Two other species in this family were nicely named with etymology supplied:

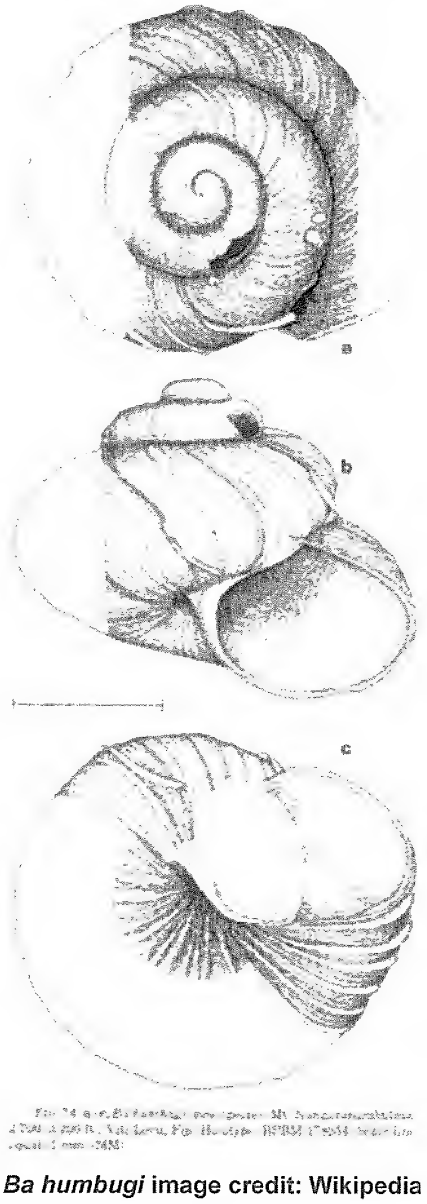
Notoacmea rapida Nakano, Marshall, Kennedy & Spencer, 2009 – Etymology: Rapid (Latin). When the bivalve shells to which living animals were attached were turned over, this species moved quickly to avoid direct light, a behaviour not seen in any other species of Notoacmea.

Notoacmea turbatrix Nakano, Marshall, Kennedy & Spencer, 2009 – Etymology: Trouble-maker (Latin). Alluding to the difficulties we experienced in recognizing this species.

A sense of humour is clearly useful in the trials of taxonomy, though often presented with elegant phrasing, as in the case of the genus *Dilemma* (a genus of carnivorous, sessile bivalves in the family Poromyidae): Genus *Dilemma* Leal, 2008 – Etymology: The generic name is the Greek noun dilemma, a proposition consisting of questionable alternatives. It is used in this case to denote the impasses faced by the author in the course of this work.

And there is sheer delight in some examples which need no explanation:

Abra cadabra Eames & Wilkins, 1957 - *Abra* being a genus of marine bivalves in the family Semelidae – sadly, this species is now superseded by *Theora cadabra* (Eames & Wilkins, 1957) which just doesn't have the same ring to it.



***Ba humbugi* image credit: Wikipedia**

My favourite is *Ba humbugi* Solem, 1983 – a small snail in the family Charopidae, and the author, American malacologist Alan Solem, makes a comment about the name: "Because it occupies a portion of Viti Levu which includes the Mba District, I have chosen the European spelling of the district for a generic name. This was followed by an irresistible impulse to use the specific name *humbugi*."

But not all are as they seem! I wondered just how much noise a small snail in the family Cerionidae had to make before its authors would name it *Cerion aguayoi bequaerti* Torre & Clench, 1932 – but its subspecific name is more mundanely inspired by Dr. Joseph Bequaert (1886-1982) of the American Museum of Natural History.

There does seem to be an enjoyable vein of imaginative thinking when it comes to naming (and it isn't confined to Mollusca). I can't conclude without the story of our endemic tellin *Elliptotellina urinatoria* (Suter, 1911). The author made no published mention of its etymology but his colleague Powell revealed all:

"On the subject of shell names, many of which may appear to be either obscure or incongruous, one in

particular *Ascitellina urinatoria* (Suter), warrants some explanation, and I believe that I am one of the few with knowledge of the reason for the curious specific name selected. The late Mr Henry Suter, with his cryptic style of humour, was merely striving to point out that the original specimen owed its discovery to the fact that it was washed out of the dredged mud, lodged in the scuppers of the research vessel, by a method suggested by the choice of name."

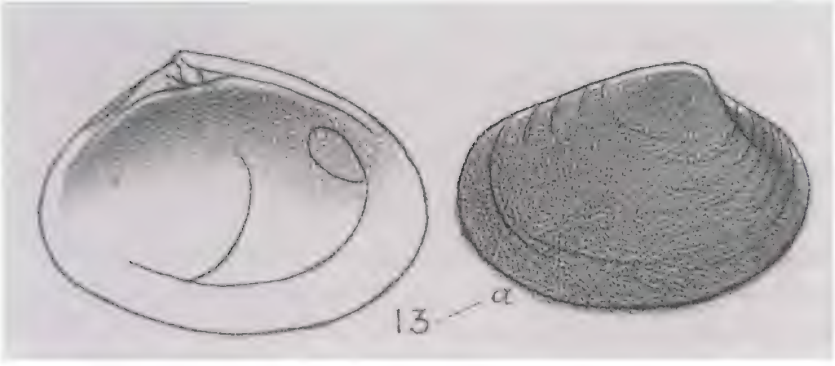


Figure 13a from Plate 54 that illustrates *Tellina urinatoria* (as it was named by Suter in 1911).

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SUTER, H. 1915. Manual of the New Zealand Mollusca. Atlas of Plates. John MacKay, Government Printer, Wellington.

Test your knowledge

What are we and what species are we from?
Clue: 11 mm, Auckland Islands.

Answer: These are the lithodesma of *Asthenothaereus maxwelli* B.A. Marshall, 2002. Lithodesma are a calcareous plate found attached to the ligament in many bivalves.

DR BRUCE MARSHALL & KERRY WALTON

Dive Report: Sail Rock

by Kerry Walton

Date/Time:
13 January 2018, 1:00-1:45 pm.

Dive site:
SW side of Sail Rock, Bream Bay, Northland, 36°00.19'S, 174°41.80'E, 12-18 m depth.

Bottom overview:
The dive site features a steeply sloping rock-face interspersed with fallen slabs and runnels that are filled with turnable boulders and bryozoan grit. The surfaces were covered with a variety of sponges, bryozoans, cup-corals and the kelp, *Ecklonia radiata* (C. Agardh) J. Agardh, 1848. The limpet-like brachiopod, *Novocrania huttoni* (Thomson, 1916) was numerous under the larger rock slabs. Small fish-life abounded, especially young two-spot demoiselles, but there were surprisingly few large fish species or crayfish seen. The spectacular, long-spined urchin *Diadema palmeri* Baker, 1967 was common in overhangs below 15 metres.

Weather/sea conditions:
Wind NE, 15 km, easing; scattered cloud, clearing; seas slight, swell 0.5 m; early incoming tide, current negligible; underwater visibility 12 m.

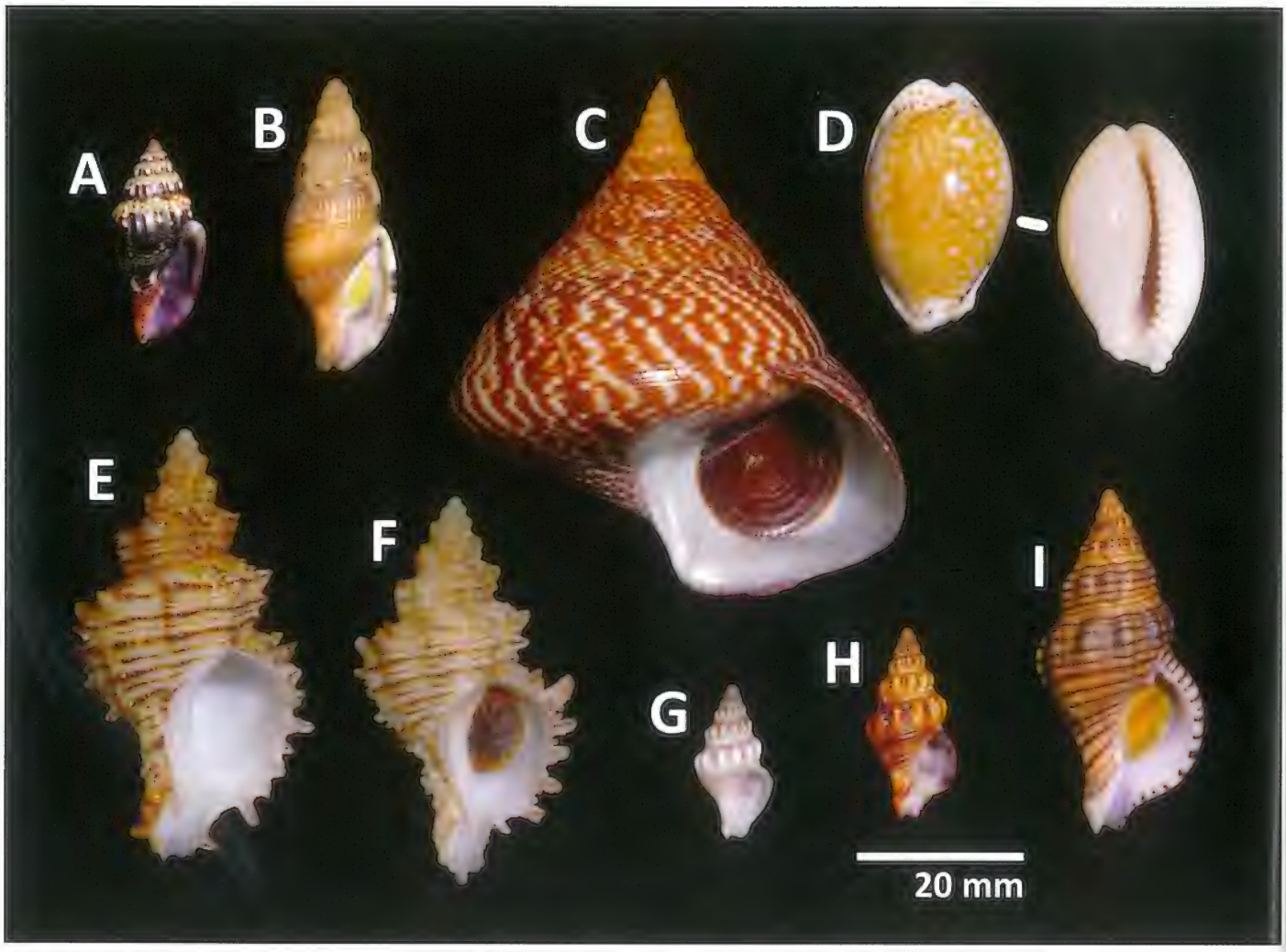
Team:
Kevin Burch (KB) and Kerry Walton (divers), Eric Scott (boatman).

Comment:
We boys had a spectacular new toy – a large powerboat

capable of 38+ knots. KB had dived the western face of Sail Rock many years ago, finding live *Isara carbonaria* (Swainson, 1822) and much potential. Sail Rock is closer inshore than the much venerated Poor Knights Islands, especially when launching out of Whangarei Harbour (as we were) rather than along the Tutukaka coast. Unlike the Poor Knights, Sail Rock is not within a marine reserve. It lies in the southern entrance to Bream Bay, south of Whangarei. Whilst clearly visible and impressive from shore, the awe-inspiring presence of Sail Rock is greatly amplified when nearer in proximity. The rock rises to 139 m out of the water and drops off at a very steep angle to the 50 m ambient water depth. It is a popular site for fishing; sufficiently offshore and in water deep enough to attract many of the so-called 'warm-water' species one would find at the Poor Knights Islands, which lie not far to the north.

The Poor Knights Islands are dived very frequently because access is easy. There is a large marina and active dive clubs are nearby; and the diving is simply stunning - world class as far as temperate sites go. There is, therefore, a tendency to interpret many of the interesting shells that occur at the Poor Knights (cowries, *Polinices tawhitirahia* Powell, 1965, *Morula palmeri* Powell, 1967 etc.) as being extremely rare or absent on other, more inshore islands or on the mainland itself. This, however, is a sampling bias, and given the relative number of dives at the Poor Knights (versus, say, the Cavalli Islands or indeed Sail Rock), it is not surprising that many cowries have been found at the Poor Knights but few, if any, at other localities. Being well offshore, situated within a reserve and right in the brunt of the relatively warm East Auckland Current helps to make the Poor Knights fauna interesting. However, almost every species that occurs there has also been found at the Cavalli Islands to the north, and it is my bet that all could equally be found at Sail Rock and other such infrequently dived localities along Northland's eastern coastline.

Hard-at-work divers KB and Kerry. Photo: Eric Scott



Shells collected in 12-18 m of water off Sail Rock by divers. To scale, scale bar indicated.
A. *Volutomitra obscura* (Hutton, 1873), under rock; B. *Cumia mestayerae* (Iredale, 1915), under rock; C. *Maurea tigris* (Gmelin, 1791), on *Ancorina* sp. sponge; D. *Erosaria cernica* (G.B. Sowerby II, 1870), fresh-dead in runnel; E, F. *Rolandiella scotti* (B.A. Marshall & K. Burch, 2000), in runnel; G, H. *Buccinulum robustum* Powell, 1929, under rocks; I. *Buccinulum linea* (Martyn, 1784) New Zealand (M.316903), under rock.

Fabulous freaks

Struthiolaria papulosa (Martyn, 1784) is a common, endemic species found around our North, South and Stewart Islands but is rarely found looking like the two images at bottom left. Left: A specimen found washed up on 24 July 2018, about 500 m from the mouth of the Whakatane River, Coastlands, Whakatane. Derrick Crosby, its finder, comments: "It's either a genetic mutant, or damaged as a very small shell." Centre: Pat Lakeman found this specimen at Paraparaumu Beach, Kapiti Coast, in September 2012. Right: How the shell ought to look? Andrew Spurgeon's specimen from Bream Bay, Whangarei. http://www.mollusca.co.nz/

The bountiful Bay of Islands

by Kerry Walton, Kevin Burch and Eric Scott

The Bay of Islands is a naturalist's paradise with innumerable sheltered and idyllic bays and islands, as well as rugged points exposed to the open ocean and the comparatively warm East Auckland Current. The mollusc fauna includes many of the rare northern species that shell collectors swoon over and is pretty well sampled. The region has been the subject of numerous collecting visitations by various people and institutions over the years (see: Morley & Hayward, 1999). The three of us had a small but stable launch that had already proved itself to be an excellent dredging and diving platform; and we had three days to explore the region. In all, it was a most productive exercise; thoroughly enjoyable and with good company, if we do say so ourselves!

Many species have been described as something along the lines of 'rare warm-water visitors to New Zealand' (e.g. Powell 1974, 1976). These however, may be less 'intermittent arrivals' than simply rare species that are seldom encountered. Shell collectors are no longer dredging or diving as extensively these days as in days gone by. Also, many of these species had never been encountered in the early 1900s because diving for shells was then unheard-of, giving the impression of them having first arrived in New Zealand in the mid-to-late 1900s when such pastimes became more common (Beu 2004: 116). It is unfortunate that several species that are very unlikely to naturally occur on the New Zealand mainland, such as *Chicoreus ramosus* (Linnaeus, 1758) and *Charonia tritonis* (Linnaeus, 1758), have been included on lists of such warm-water species, presumably as a result of one or two mislocalised specimens or 'mantle-piece shells' having been discarded on a local beach. Pending the discovery of live individuals by reputable collectors, these are wisely omitted from local faunal checklists accordingly, although making such judgement calls is not easy.

Many specimens of species that are rare in New Zealand but more common in tropical waters, such as *Lyncina vitellus* (Linnaeus, 1758) and *Eudolium* species, have recently sold at shell club auctions as being from New Zealand; a claim of which we are extremely dubious in many cases! Buyer beware! Fraudulent claims cast doubt upon any specimen of such species where the provenance is unclear or the collector not as well trusted or known, assuming that the collector has been truthfully attributed to the specimen in the first place! For this reason, detailed provenance information is crucially important in private shell collections. Genuine records of such species, like the *Tonna perdix* (Linnaeus, 1758) found near Whangaroa by Andrew Spurgeon and featured in *Cookia* last year, should also be publicised to enable the clarification of actual distributions in light of the uncertainty caused by potentially mislocalised or fraudulently labelled specimens. We were extremely pleased and surprised to find a small *T. perdix* of our own sitting on an otherwise bare beach near Cape Brett and far from any settlement.

One of the species we most hoped to find was the terebrid *Perirhoe circumcincta* (Deshayes, 1857). This species, while relatively common at the Kermadec Islands, is known from mainland New Zealand from little more than a dozen records from the Bay of Islands collected in the 1970s and 1980s (Powell 1974). Is it still present on the mainland or were those few records the result of chance spat-falls surviving only to die out soon afterwards? The latter was suggested by Morley & Hayward (1999: 119), however the two other species

The waterfront at Russell, Bay of Islands. Photo: Kerry Walton

they mentioned when making this suggestion, *Kurodavolva wakayamaensis* (Cate & Azuma, 1973) and *Notocochlis cernica* (Jousseaume, 1874), have both been seen or collected on the New Zealand mainland within the past two years. We dredged off Black Rocks (near Cape Wiwiki) and west of Waewaetoria Channel; both localities where *P. circumcincta* had been collected previously. Alas, it proved elusive. We did, however, recover live *Cuspidaria willetti* Fleming, 1948, *Pratulum pulchellum* (Gray, 1843), *Neilo australis* (Quoy & Gaimard, 1835), *Serratina charlottae* (E.A. Smith, 1885), *Notocallista multistriata* (G.B. Sowerby II, 1851) and singles of *Moerella huttoni* (E.A. Smith, 1885) off Black Rocks in 30-40 metres of water in mud. West of Waewaetoria Channel the bottom comprised sand, rhodoliths and shell grit, with *Tawera spissa* (Deshayes, 1835) and *Cominella quoyana* A. Adams, 1855 the most prevalent large molluscs. *Amalda northlandica* Hart, 1995 and *A. mucronata* (G.B. Sowerby I, 1830) were present but in low density.

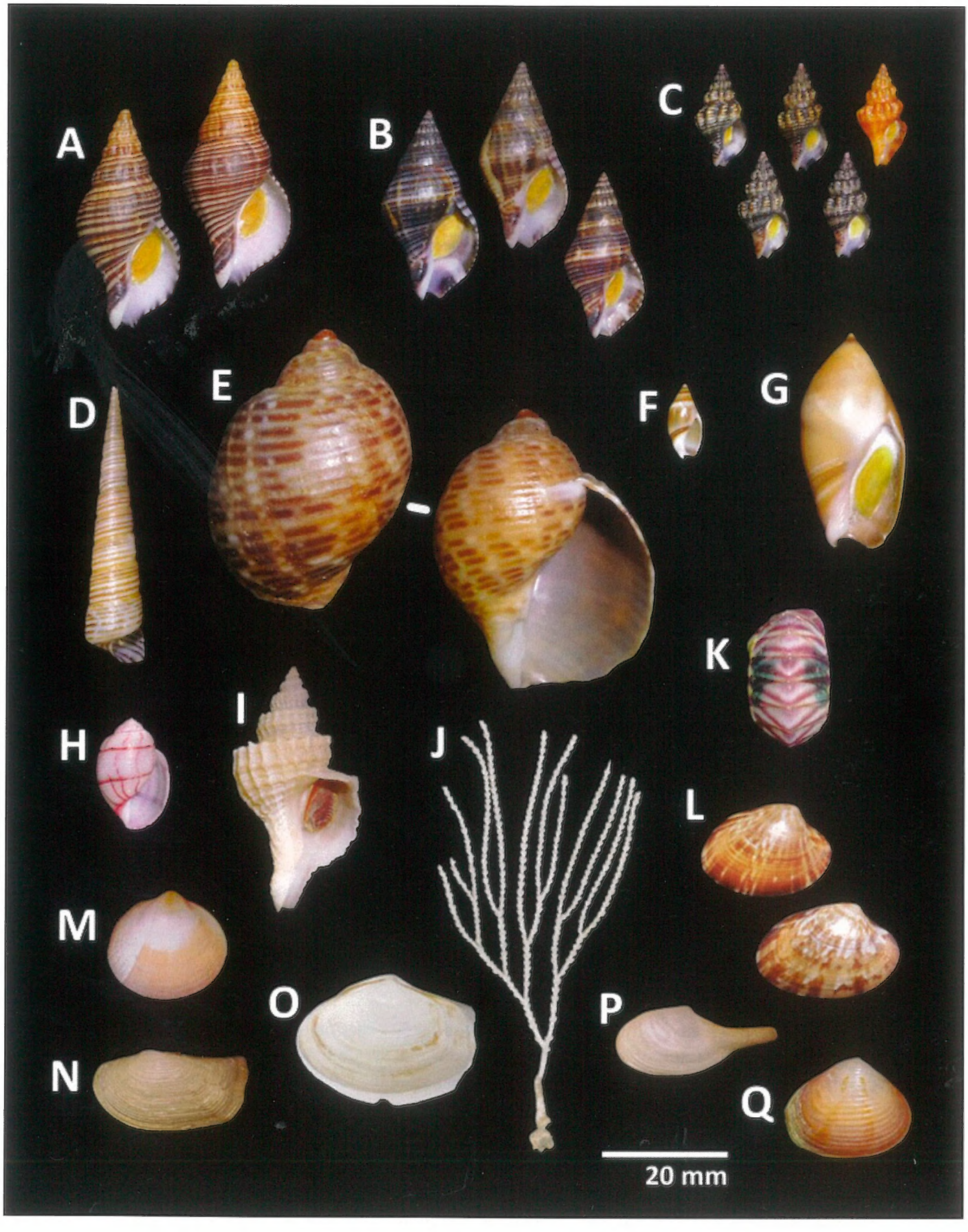
The most often cited locality for *P. circumcincta* is Deep Water Cove – a large sheltered embayment in the outer Bay of Islands near Cape Brett. The water is about 40 metres deep in the entrance where one can find the popular dive site represented by the wreck of the HMNZS *Canterbury* (F421), a Leander-class frigate (not the present-day auxiliary vessel of the same name) scuttled there in 2007. The entire bay is now protected by a marine reserve, with the collection of anything strictly prohibited. No matter. The depth often cited on the labels of species that one might want from there is about 50 metres, suggesting that most were in fact collected outside of the present reserve anyway. We dredged somewhat awkwardly in the 50 metres or so just beyond the reserve limits and tending towards Cape Brett. The sea conditions were suboptimal as there was a growing chop and, at 50 metres, we were at the lower depth limit for the dredge and rope we were using. We recovered a number of live *Zeacolpus vittatus* (Hutton, 1873), a live *Talabrica bellula* (A. Adams, 1854) and very little else, to the extent that we were not convinced the dredge was towing properly. The large-diameter anchor rope with which we were lumbered was far from ideal as, with so much rope out (2.5 to 3 times the water depth), the rope would have provided a lot of drag through the water and could have lifted the mouth of the dredge. Frustrated, we decided to tow the dredge into the rocks and risk a snag since the gear we were using was due to be replaced anyway and we had dive gear aboard should the need arise to salvage anything. While we got no molluscs, there were three little branches of primnoid gorgonian corals, which are the host for *K. wakayamaensis* and we were near enough to the locality where, many years before, Kevin had found four living examples of what he believes were *Coralliophila sertata* (Hedley, 1903) in similar depths (~40 m) on similar soft-corals on a dive. Tragically, the dive-bag fell loose and the specimens in question were lost!

Diving near the entrance to Deep Water Cove, we found a bank of turnable boulders covered with unhappy-looking *Ecklonia radiata* J. Agardh, 1848 (kelp) and ranging from about two to ten metres of water depth. Within and under the boulders we found three crabbed *Cumia mestayerae* (Iredale, 1915), four strongly ribbed *Volutomitra obscura* (Hutton, 1873) and several striking specimens of four *Buccinulum* species, including over a dozen live and spectacularly large and clean *B. robustum* Powell, 1929, most of which were dark in colouration, but one of which was a striking orange-red. Many buccinid and muricid taxa are known to have infrequent pale golden or red forms where that is not the normal colouration. It's not albinism strictly speaking, but any number of causes can influence abnormal colouration care of the number of interacting genes that code for the production, regulation and deposition of different pigments.

Within the comparatively sheltered inner Bay of Islands, the beaches and coves are calm and resemble a tropical paradise. Aptly named Paradise Bay on Urupukapuka Island, and the neighbouring Otiao Bay, are two such locales. In no more than four metres of water we dredged and dived on a unique habitat of fine white sand patches interspersed with mats of coralline turf algae and *Zostera* seagrass. By fanning through the fine sand, we collected quite a number of the so-called 'uncommon' species *T. bellula* and *Hunkydora*

Plate opposite page - to scale, scale bar indicated:

A. *Buccinulum linea* (Martyn, 1784). B. *B. vittatum* (Quoy & Gaimard, 1833). C. *B. robustum* Powell, 1929. D. *Zeacolpus vittatus* (Hutton, 1873). E. *Tonna perdix* (Linnaeus, 1758). F. *Amalda northlandica* Hart, 1995. G. *A. mucronata* (G.B. Sowerby I, 1830). H. *Bullina lineata* (Gray, 1825). I. *Zeatrophon ambiguus* (Philippi, 1844). J. *Primnoides* sp. K. *Rhyssoplax canaliculata* (Quoy & Gaimard, 1835). L. *Notocallista multistriata* (G.B. Sowerby II, 1851). M. *Pratulum pulchellum* (Gray, 1843). N. *Neilo australis* (Quoy & Gaimard, 1835). O. *Hunkydora novozelandica* (Reeve, 1859). P. *Cuspidaria willetti* Fleming, 1948. Q. *Talabrica bellula* (A. Adams, 1854).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novozelandica (Reeve, 1859), as well as innumerable *Corbula zelandica* Quoy & Gaimard, 1835. We also retrieved a fresh but dead example of *Bullina lineata* (Gray, 1825), which nearly graced the cover of this very issue of *Cookia* and may well have done so had we a slightly higher resolution image of it! There is a temptation to think of such species as *B. lineata* and *Hydatina physis* (Linnaeus, 1758) as being dwellers of the intertidal zone as most collectors are limited to that region and certainly both species can be found alive there during a particularly blue moon. However, both are regularly seen by divers throughout normal SCUBA depths and their absence during your low-tide stroll out to Dog Island in Parengarenga Harbour is not to say that they are not present, rather, that they may be below your reach!

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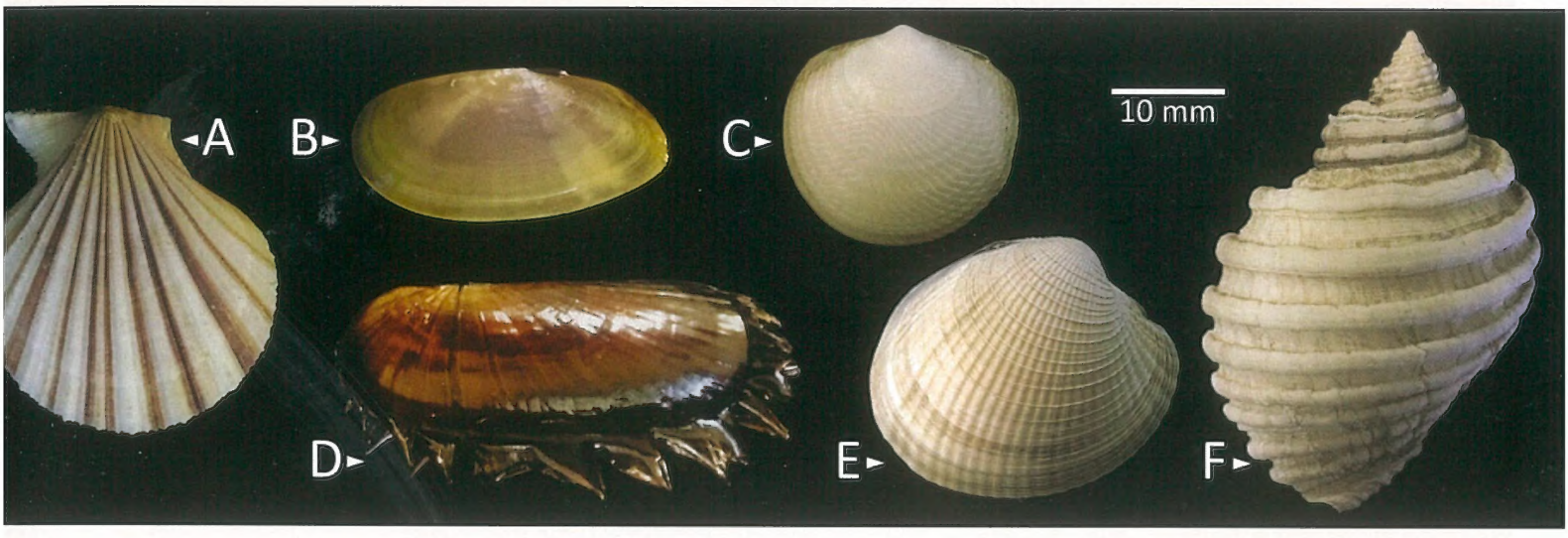
About *Cookia*

Cookia is the journal of the Wellington Shell Club and is published annually. *Cookia* was first published in 1976; prior to that date Wellington Shell Club published a Circular (1956-1965) and then a Bulletin (1967-1975) as well as occasional Study Notes on families of molluscs. For information on earlier publications see the Club's website: www.wellingtonshellclub.org.nz. To request back copies or copies of articles please contact Jill Burnett, 84 Brougham Street, Mt Victoria, Wellington 6011.

Your editors strive to attain a high quality of publication and careful fact-checking. The scope of articles is intended to reflect the differing specialties, levels of interest and experience within the Club: we hope all members will be able to contribute should they wish. We welcome both scientific and non-scientific articles, opinion pieces, photos, drawings and poems, and articles not directly related to shells or shell collecting so long as they have some relevance.

Your contributions are greatly appreciated - editorial policies and formatting suggestions for anyone considering submitting articles for future editions are available on the Club's website, or you are welcome to consult the editors. Photos or drawings provided should be of a high resolution, & supplied as individual files (i.e. not embedded into text). The editors may be able to arrange for imaging of specimens if required. Unless of an in situ individual, an assortment of specimens in one shot or an artful context, it is preferred that specimens are photographed at 90° to the height/length axis of the shell, with apertural views of gastropod species preferred. Multiple views, angles or images of the same specimen are appreciated.

Identification challenge solution:



A) *Talochlamys zelandiae* B) *Hiatula nitida* C) *Divalucina cumingi*
D) *Solemya parkinsonii* E) *Austrovenus stutchburyi* F) *Dicathais orbita*